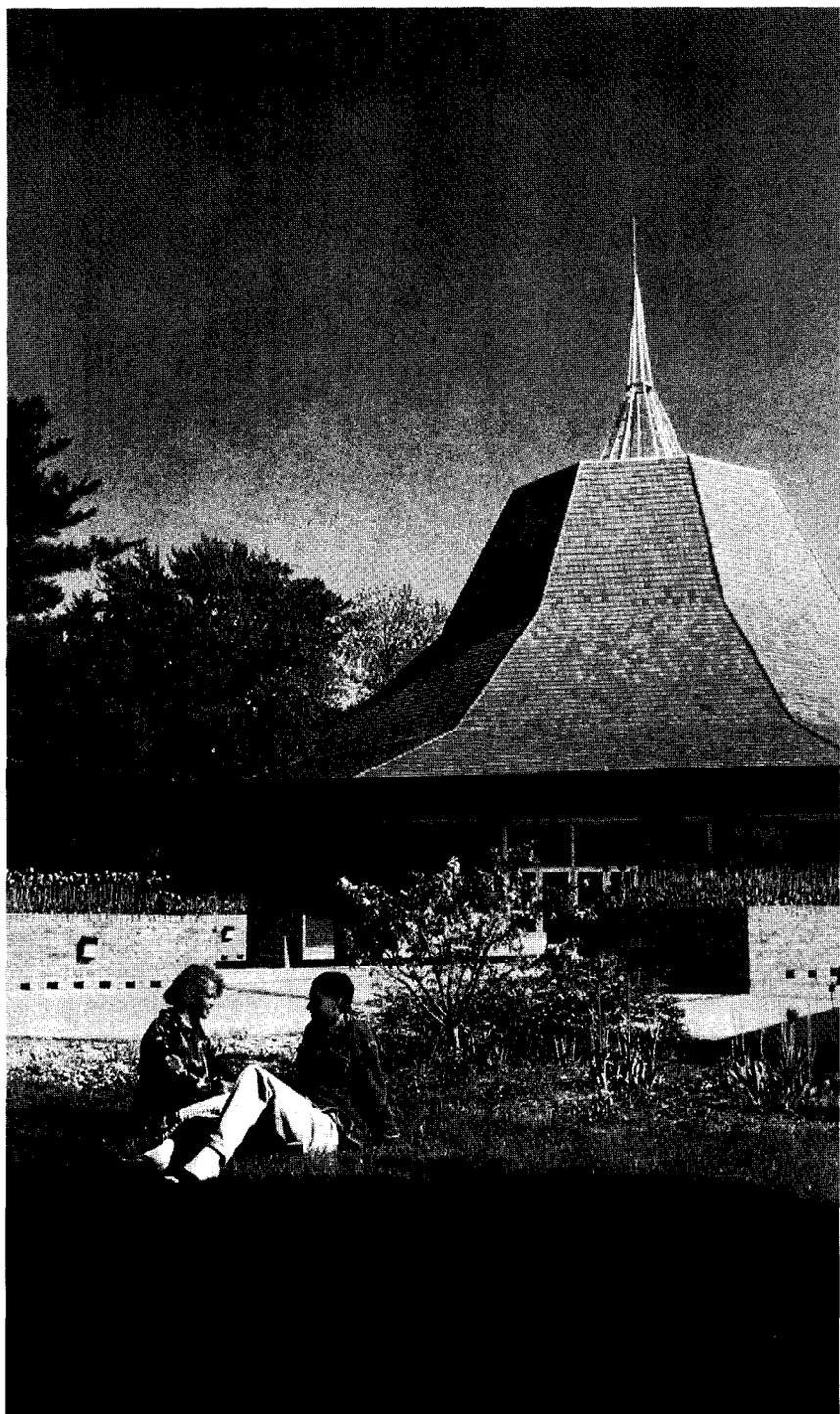


# CALVIN

College



*Catalog 1994/95*



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# 1994-1995

SEPTEMBER 1994							OCTOBER 1994							NOVEMBER 1994						
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Important Deadlines for Students	Fall Semester	Spring Semester
Final day to add classes	September 9	February 3
Final day to file requests to take exemption or credit exams	September 30	February 15
Final day to change from credit to audit or audit to credit	September 30	February 24
Final day to drop course	November 4	March 31
Final day to remove incompletes from the previous semester	December 1	May 1

# ACADEMIC CALENDAR

## The Fall Semester 1994

August	30	Tuesday	Faculty conference
	31	Wednesday	Residence halls open
August/September	31-3	Wednesday-Saturday	Orientation and registration
September	5	Monday	First semester classes begin 8:00 a.m. Convocation 9:45 - 10:45 a.m.
November	1-2	Tuesday-Wednesday	Reading recess and spring/interim advising
	7-11	Monday-Friday	Registration for interim and spring semester for all currently enrolled students
	21	Monday	Friday class schedule in effect
	23	Wednesday	Thanksgiving recess 10:00 p.m.
	28	Monday	Classes resume 8:00 a.m.
December	8	Thursday	Classes end 10:00 p.m.
	9	Friday	Reading recess
	10	Saturday	Examinations begin 9:00 a.m.
	15	Thursday	Examinations end Christmas vacation begins 9:30 p.m.

## The Interim 1995

January	4	Wednesday	Interim term begins 8:00 a.m.
	25	Wednesday	Interim term ends 10:00 p.m.

## The Spring Semester 1995

January	30	Monday	Spring semester classes begin 8:00 a.m.
March	21-22	Tuesday-Wednesday	Reading Recess/advising days
	24-30	Friday-Thursday	Registration for fall semester
	31	Friday	Spring break begins at 5:00 p.m.
April	11	Tuesday	Spring break ends at 8:00 a.m.
	14	Friday	Modified class schedule Classes end at 12:50 p.m. Good Friday service starts - 1:00 p.m.
May	27	Thursday	Honors Convocation
	10	Wednesday	Classes end 10:00 p.m.
	11	Thursday	Reading recess
	12	Friday	Examinations begin 9:00 a.m.
	17	Wednesday	Examinations end 10:00 p.m.
	20	Saturday	Commencement 3:00 p.m.

## The Summer Sessions 1995

May	22	Monday	Summer Session I begins 8:30 a.m.
	29	Monday	Memorial Day Recess
June	14	Wednesday	Summer Session I ends
	19	Monday	Summer Session II begins 8:30 a.m.
July	4	Tuesday	Independence Day recess
	12	Wednesday	Summer Session II ends
	13	Thursday	Summer Session III begins 8:30 a.m.
August	4	Friday	Summer Session III ends



# THE MISSION OF THE COLLEGE

## **Vision**

Calvin College is a comprehensive liberal arts college in the Reformed tradition of historic Christianity. Through our learning, we seek to be agents of renewal in the academy, church, and society. We pledge fidelity to Jesus Christ, offering our hearts and lives to do God's work in God's world.

## **Purpose**

Our primary purpose is to engage in vigorous liberal arts education that promotes lifelong Christian service. We offer education that is shaped by Christian faith, thought, and practice. We study and address a world made good by God, distorted by sin, redeemed in Christ, and awaiting the fullness of God's reign. We aim to develop knowledge, understanding, and critical inquiry; encourage insightful and creative participation in society; and foster thoughtful, passionate Christian commitments. Our curriculum emphasizes the natural, cultural, societal, and spiritual contexts in which we live; our teaching respects diverse levels, gifts, and styles of learning; and our learning proceeds as a shared intellectual task.

Another purpose is to produce substantial and challenging art and scholarship. We pursue intellectual efforts to explore our world's beauty, speak to its pain, uncover our own faithlessness, and proclaim the healing that God offers in Jesus Christ. We strive to embrace the best insights of Christian life and reflection; engage issues in the intellectual and public spheres; and enrich faith by the heritage of the past and the discoveries of today. Our faculty and staff are committed to keen and lively work in their chosen fields and to sharing its fruits with others.

We are also called to perform all our tasks as a caring and diverse educational community. We undertake our tasks in response to a divine calling. Together we challenge ourselves to excellence as we acquire knowledge, cultivate aspirations, and practice lives of service. We seek to gather diverse people and gifts around a common pledge and purpose; pursue justice, compassion, and discipline; and provide a training ground for the life of Christian virtue. Our classrooms embody a community of faith and learning extending across campus and beyond.

## **Commitment**

We profess the authority of scripture and the witness of the ecumenical creeds. We affirm the confessions and respect the rich traditions of Reformed believers worldwide and, in particular, those of the Christian Reformed Church. We aim to enhance the cultural life about us and to address local needs. In all we say and do, wherever we may be, we hope to follow and further the ways of God on earth.

## **Christian Community**

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

A commitment of the community is to seek, nurture, and celebrate cultural and ethnic diversity, in obedience to the biblical vision of the kingdom of God formed "from every tribe and language and people and nation." Its members are part of the family of Christ that transcends ethnic, cultural, racial, gender, and class boundaries; a community in which each member earnestly desires to use his or her gifts for the service and support of the other members. The Calvin community has come together from wide-ranging backgrounds and places. Personal and spiritual maturity is uneven; expectations and goals, diverse. Obviously unanimous agreement by every member on the community's shared commitments is quite impossible. While no one is forced to acknowledge Jesus Christ as Lord, each one who has chosen to join the Calvin community thereby declares he or she is willing not to violate the community's values and commitments. While each member is chiefly accountable to God for his or her own life's pattern, all members also bear responsibility to and for one another in this community. God's infallible Scripture provides a trustworthy guide for our faith and life together. In addition to the explicit teachings of Scripture which members strive to uphold, the college community also chooses to maintain certain standards of behavior for prudence and good order in our life together.

## **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 Brèges, in 1561; and the Canons of Dort.

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

The founding date of Calvin College and Seminary is 1876. In that year the Christian Reformed Church adopted a six-year curriculum for ministerial training. The first

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

The school, which had started with seven students, grew slowly during the early years, but by 1930 it had reached its pre-World War II size of 350-450 students. By 1950 the enrollment had climbed to 1,270 and now is approximately 3,600.

The curriculum has expanded to include professional training in a variety of fields, but the college maintains a strong commitment to its liberal arts curriculum as a means to develop students' understanding of God's world and their place in it.

## **Government**

The corporate name of the college is Calvin College. It is governed by a single board of trustees which represents the ecclesiastical geographical districts of the church. The membership of the board is constituted of representatives elected by the various classes, nominations from the alumni association and by the board of trustees. These are approved by synod. The Board of Trustees meets in October, February, and May. An executive committee functions for the board throughout the academic year.

## **Compliance with Legal Requirements**

Calvin College, in accordance with Title VI of the Civil Rights Act of 1964, operates in a non-discriminatory manner with regard to race, color, age, or national origin. Furthermore, as required by Title IX of the 1972 Education Amendments, Calvin College does not discriminate on the basis of sex in its educational programs, activities, or employment policies. Calvin College also provides equal opportunity for qualified handicapped persons in accordance with the requirements of Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990. Instructional and other physical facilities are readily accessible to handicapped students and special rooms in the residence halls are designed for barrier-free living. The Director of Student Academic Services provides advice and support to students with disabilities. Inquiries and appeals regarding compliance with these federal requirements should be directed to the Vice President for Administration and Finance, Calvin College Financial Services Office, as Civil Rights, Title IX, and Section 504 coordinator. Student appeals will be heard by the Academic Standards Committee.

## **Accreditation and Affiliation**

Calvin College is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools. It is also accredited by



the American Chemical Society, National Association of Schools of Music, and the National Council for Accreditation of Teacher Education. The Hope-Calvin Nursing Program is accredited by the National League for Nursing and the Michigan Board of Nursing; the Engineering Program is accredited by the Accreditation Board for Engineering and Technology; and the Social Work Program is accredited by the Council on Social Work Education. It is on the American Association of University Women list of institutions qualified for membership in the association. It maintains membership in the American Council on Education, the Association of Independent Colleges and Universities of Michigan, the National Association of Independent Colleges and Universities, the American Association of Colleges for Teacher Education, 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, Michigan Campus Compact and is an affiliate member of the American Society of Engineering Education.

## **Calendar, Summer School**

The academic calendar at Calvin College forms the typical 4-1-4 plan consisting of two semesters, each approximately four months in length, plus a one-month interim term in January. During each of the two semesters, students normally take four courses and during the interim, one course. A reading recess during the first semester and the spring vacation during the second provide an opportunity for students to do research and to complete major projects.

The summer school consists of three consecutive three-and-a-half week sessions; a student is permitted to register for one regular course during each session.

# STUDENT LIFE AND SERVICES

## **The student life on campus and its regulation**

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

## **Worship and Christian Service**

To grow in loving devotion to God is the goal our Lord places before everyone who belongs to Him. All members of our community, students and staff alike, are encouraged to make personal devotional time part of the rhythm of their daily schedules. In addition, Calvin College wants its members to participate in the other opportunities on campus that will nurture this devoted love for God.

Public worship is a means of acknowledging God's presence in our lives and maturing in our faith. All students, therefore, are expected to attend one of the many churches located throughout the area or Knollcrest Worship Services held in the chapel on Sundays for students.

Chapel services are held weekdays at 10:00 a.m. in the chapel, and services of morning prayer are offered twice weekly at 7:30 a.m. The college keeps these interludes in its daily schedule so that students and staff may affirm their dependence upon God and grow toward one another in Christian community. In addition to the main service held in the chapel sanctuary, a series of foreign-language worship services and group devotions are held regularly in the smaller meditation chapel located in the lower level of the chapel. The college encourages students to make communal worship part of their routines.

Numerous opportunities exist for other voluntary religious activities, including Bible study groups, faculty-student mentoring groups, prayer groups, Christian service and evangelistic outreach projects, and group fellowships such as InterVarsity Christian Fellowship and Campus Crusade.

If a student desires pastoral counseling, he or she is encouraged to contact a local pastor or the college chaplain.

## **The Fine Arts**

Many sorts of fine arts activities thrive at Calvin both as part of the academic life and as the result of spontaneous student interest. Bands, orchestras, choral groups, and chamber ensembles are part of the program of the Department of Music for the participation of all qualified students. Theatrical productions, including Calvin Theatre Company 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*, a student literary magazine, and *Chimes*, the campus newspaper, provide opportunities for student publication.

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

## **Intercollegiate and Intramural Athletics and Recreation**

Intercollegiate athletics play an important role in student life at Calvin. Calvin is a member of the Michigan Intercollegiate Athletic Association (MIAA) and the National Collegiate Athletic Association (NCAA). Calvin men compete in cross-country, golf, basketball, soccer, swimming, baseball, track, and tennis. Calvin women compete in cross-country, golf, volleyball, basketball, swimming, track, softball, tennis, and soccer. For men we have club teams in hockey, volleyball and lacrosse. Intramurals are also an important phase of the physical education program and provide students with the opportunity to participate throughout the year in a variety of programs.

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

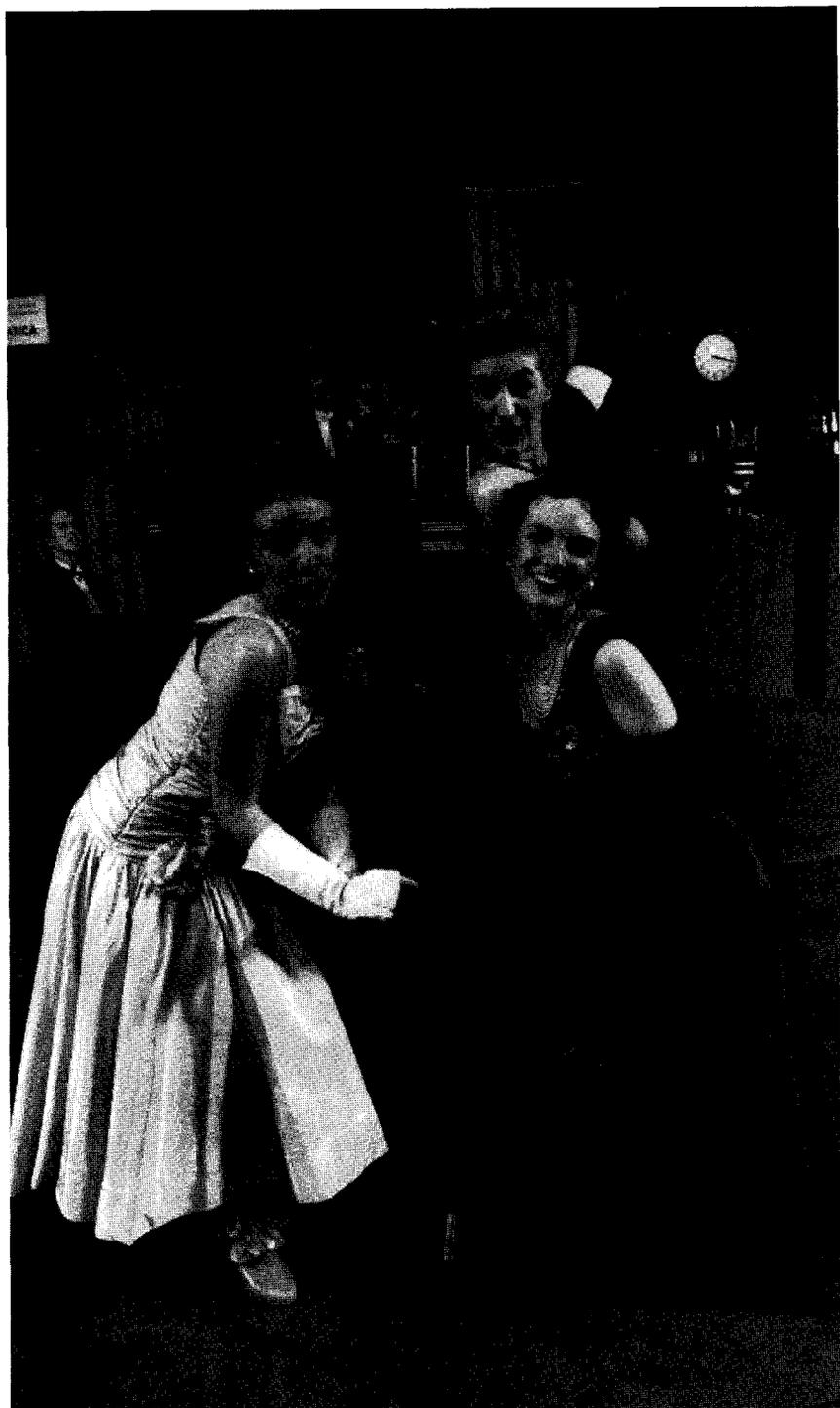
## **Student Senate and Other Organizations**

The Student Senate allocates the budgets of student organizations and concerns itself with student publications, homecoming, film arts, the campus radio station, and similar groups.

Nearly forty student organizations exist on campus, some of which are related to particular academic departments. All organized clubs have a faculty mentor and receive formal approval through the Student Life Committee.

## **Service-Learning Center**

The Service-Learning Center is the hub for student and faculty involvement in the community. The mission of the S-LC is "Serving to Learn . . . Learning to Serve." At Calvin College, Service-Learning refers to activities which are designed to both contribute to the meeting of community or individual needs and to aid in the development



of the knowledge and understanding of the service giver. Although students learn in a variety of areas through service-learning, the S-LC encourages three broad learning goals for all participants:

1. *To learn to relate to others—even the poor, the sick, the outcast, the old—as bearers of God's image: to bridge social and economic barriers between people.*
2. *To understand the broader context and causes of the needs which exist.*
3. *To discover and develop a personal vision and capacity for service in a broken world.*

Students participate in the Service-Learning Center primarily through weekly service activities with a primary emphasis on relationships with the most disadvantaged people in the community: children in inner-city public schools and poor urban neighborhoods, people with physical and mental handicaps, isolated and lonely elderly people, people with very limited economic opportunities. The Service-Learning Center also provides support and coordination for special student projects and initiatives. Students deliver over 250 baskets to people with low incomes at Thanksgiving time. During spring break groups of students travel to lend a hand and learn in other communities.

Students can also be involved in the community through “academically-based service.” This is service performed out of the context of a course in the curriculum. The faculty has defined academically-based service as “service activities that are related to and integrated with the conceptual content of a college course, and which serve as a pedagogical resource to meet the academic goals of the course as well as to meet community or individual needs.” Courses in which students could be involved in service activities as either requirements or options have been offered in at least sixteen disciplines—from Computer Science to Philosophy—representing a broad spectrum within the curriculum. The Service-Learning Center can provide more specific information to students about courses which include “academically-based service.”

## **Student Conduct**

Admission to Calvin College is a privilege that may be withdrawn from any student who does not meet the academic standards of the college. In addition, the college not only expects students to conduct themselves both on and off campus in accord with the Christian goals and standards of the college but also may refuse admission to, may discipline, or may expel any student who in its judgment displays conduct or attitudes unworthy of the standards of the college. The *Student Handbook* and *Residence Hall Living* booklets describe the regulations and their implementation.

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

While the *Code* does not seek to develop a detailed and exhaustive summary of what a student may or may not do, it does contain, in addition to Christian principles of behavior, a list of prohibited conduct. Among those prohibited actions are all kinds of dishonesty, acts of violence, disruption of institutional activities, theft, unauthorized entry, sexual misconduct, use of alcoholic beverages on campus and at extended campus events, drunkenness, profane and obscene language and use of illegal drugs. Sanc-

tions for misconduct range from verbal warning to expulsion.

The judicial processes require a hearing before the designated college administrators or before the All-Campus Discipline Committee, guarantee student rights to testify, to examine evidence, and to have a student or faculty member advise them at the hearings, and provide for appeal to higher judicial bodies.

## **Housing Regulations**

First-year 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 who graduated from high school at least two years prior to the fall semester may choose their own type of housing and are permitted to reside off campus.

The college requires all students to register their place of residence with the Housing Office and to notify that office of all changes in residence during the period of their enrollment. Information on available housing and further interpretation of these rules is available from the college Housing Office.

## **Use of Motor Vehicles**

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

## **Health Services**

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

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

A Group Accident and Sickness Expense Protection Plan is available to all students on a low-cost, voluntary basis. This plan primarily covers conditions for which hospitalization is required and provides little in the way of outpatient benefits. All students are strongly urged to be certain they have adequate broad-range coverage. Family plans for married students are also available. Information is available in the Financial Services Office.

The college is not normally liable for injuries sustained by students in their activities as students, even though such injuries occur on college premises, in laboratory

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

## **Orientation and Advising**

All first-year students are required to participate in Passport, a program of orientation held during the summer or just prior to registration. Guided by upperclass students serving as orientation leaders, they will meet key faculty members and administrators, receive information about college academics, activities and facilities, obtain registration materials, and meet with a faculty advisor to plan for the fall semester. Transfer student orientation takes place on the Friday just prior to the beginning of the fall semester.

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

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

After completing their first year, students are expected to ask a faculty member in their field of interest to assist them in developing appropriate academic programs and in other matters. By the end of the sophomore year, each student must work out with a faculty advisor the appropriate counseling forms defining a program which will lead to graduation. This usually requires declaring a major in a given department or group of departments. The faculty member who signs the counseling form becomes the advisor of record. The Registrar and Director of Advising are available to students for help with advising problems.

Additional general and specialized advising services are provided for all students. The college chaplain and the student deans are available to counsel students; the Office of Student Academic Services personnel provide specialized assistance designed to improve academic work.

## **Library**

The completely automated Hekman Library, at the center of the campus, serves students of both the college and the seminary. Its 650,000-volume collection of books, bound periodicals, and government documents is distributed over five floors of open stacks which are arranged according to the Library of Congress classification. Approximately 2,700 current periodicals are available for use in the library. Three major microfiche collections, The Library of American Civilization, The Library of English Literature, and ERIC are part of the 450,000-item collection of microfilm, microfiche, and microcards. The library, which is air conditioned, can seat 1,200 persons, mainly in



individual study carrels and at tables. There are also seminar rooms and a spacious lounge.

Several special collections are housed in the library. The H. H. Meeter Calvinism Research Collection, located on the fourth floor of the library, is one of the most extensive collections of books and articles on John Calvin and Calvinism available anywhere. The Colonial Origins Collection, which consists of manuscripts, archives, and other records of the Christian Reformed Church, its leaders, its Dutch origins, and closely related institutions, is located on the second floor of the library. The Calvin Library is a partial depository of government documents, holding approximately 100,000 items. The Cayvan Room with its many recordings and tapes is available for both the study and enjoyment of music.

## **Computer Center**

The Computer Center provides computing services to students, faculty, and administrative offices of both the college and the seminary. The Computer Center is centrally located in the William Spoelhof College Center. The Library Computer Lab, a central student computer laboratory, is available on the first floor of the library. This computing complex offers access to the college network including PC and Macintosh computers and terminals for the Sun and IBM computers. Other computer laboratories on campus include PC networks in residence halls, a Sun classroom in North Hall, an Engineering laboratory in the Science building, and an English classroom in the Fine Arts Center.

Software currently available to students includes WordPerfect word processing, SPSSx and Systat for statistics, Lotus 1-2-3, Quattro Pro and Wingz spreadsheets, Paradox database, Hypercard, and Pagemaker along with a variety of discipline-specific educational software. Many departments are making major advances in the integration of computing with their curriculum.

Other software which is provided to the community includes the Colleague software for college information systems running on a Prime computer, and the Dynix library system running on an IBM RS/6000.

The Computer Center staff is committed to the creative and appropriate use of technology toward the enhancement of teaching and college administration. Questions regarding computers on campus may be directed to the Computer Hotline, and documentation may be found in the Library Reserve Reading Room and student computing facilities across 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, video production services, graphics design services, a graphics production center, a television studio, the Language Laboratory, cable television distribution service, and the Curriculum Center, which contains a wide variety of textbooks and demonstration teaching material useful to teachers and prospective teachers.

### **Office of Student Academic Services**

The Office of Student Academic Services in Hiemenga Hall 323 provides many forms of student learning assistance. Peer tutors for most courses are available to students whose professors agree that tutoring would be helpful. Computer aided instruction is available to assist students' progress in specific courses and more generally, to improve basic skills. Also, academic counseling and testing are available for students with difficult learning problems. Students with disabilities, international students, and students for whom English is a second language receive services from the office as well. Finally, certain students are required, as a condition of admission or as a requirement of probation, to participate in specified aspects of these services.

### **Rhetoric Center**

The Rhetoric Center, located in the Fine Arts Center (room 200), offers free tutoring in writing. Instructors will often require or encourage their students to seek help at the Rhetoric Center, or students may at any time request an appointment with a tutor (appointments should normally be made ahead of time). Students from all disciplines and at all levels of experience are welcome. The Rhetoric Center is open Monday through Friday from 9:00 a.m. to 4:30 p.m. during fall and spring semesters.

### **Broene Center for Counseling and Career Development**

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

*Counseling.* The staff provides individual and group counseling in a variety of

areas. They offer enrichment programs in such areas as interpersonal relationships, Christian self-image, stress management, and career planning. Support group opportunities include Adult Children of Dysfunctional Families, Eating Disorders, Adult Children of Divorce, and Grief. Student concerns are kept confidential.

*Career Development.* The staff also provides assistance for students searching for careers by helping them recognize their own resources and talents and by exploring with them the variety of careers available to and appropriate for them. The career resource area contains a wide selection of career information including a computerized career informational system. The Center also houses general materials for students interested in graduate school programs.

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

*Hours.* Counselors are available by appointment or during "walk-in" times, which are posted daily time slots when a counselor is available to meet with students without an appointment. Center hours are 8:00 A.M. to 5:00 P.M. weekdays except for Wednesday, when the Center is open until 9:00 P.M. Career development services are available year-round; counseling services are available from September 1 to June 30 each academic year.

## **The Calvin Alumni Association**

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

The Calvin Alumni Association is composed of all persons who have attended Calvin College for at least one year or who have completed eight courses. Persons who have graduated from Calvin Theological Seminary are also considered members of the Association. There are currently more than 40,000 Calvin alumni around the world, many of whom are part of local alumni chapters.

The Calvin Alumni Association is governed by a board of 22 alumni, each serving three-year terms. The board meets three times each year—during Parents Weekend (Oct.), Homecoming (Feb.), and Commencement (May). The work of the Association is facilitated by the director of alumni and college relations.

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

# ADMISSION AND STANDARDS

## Procedures for Admission

In selecting students for admission, Calvin College looks for evidence of Christian commitment and for the capacity and desire to learn. Students who are interested in the Christian perspective and curriculum of Calvin and who show an interest in its aims are eligible for consideration. Although the prospect of academic success is of primary consideration, the aspirations of the applicant, the recommendation of a high school counselor, teacher, or youth pastor, and the ability of Calvin to be of service will also be considered in admission decisions. The college admits students of any race, color, and national or ethnic origin.

Prospective students will be notified concerning admission as soon as the Office of Admissions receives the following: ACT (Testing Program) SAT (Testing Program)

1. *A completed application form*
2. *\$25 application fee*
3. *Academic transcripts from high schools and colleges attended*
4. *ACT or SAT test results, preferably the ACT*
5. *The recommendation of a high school counselor, teacher, or youth pastor*

Calvin College does not have an application deadline. Completed applications are considered on a "rolling" basis. Applicants will be notified of an admission decision soon after their files are complete.

## Admission Standards

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

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### 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.

English 4 years

Mathematics 3 years

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 years	Preferably three; ideally the last unit in grade 12.
Science	2 years	Biology, chemistry, or physics; one with a laboratory. Chemistry and biology are recommended to prospective nurses. Three units are desirable for students considering programs in the sciences or health fields.
History/Social Sciences	3 years	
Electives	3 years	Typing and college preparatory courses.

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

#### Minimum Test Scores Needed for Regular Admission

ACT English 19	ACT Math 20	ACT Reading 16	ACT Comp. 20	or	SAT Verbal 390	SAT Math 420
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Applicants with lower grades and scores or with fewer college preparatory courses in their high school program are reviewed individually by the Committee on Admissions. Some of these applicants will be admitted under special conditions.

### Admission of Transfer Students

Students transferring from other colleges or universities must follow the same application procedures as first-year students. Transcripts from all previous colleges attended must be received prior to consideration for admission. ACT or SAT test results are also required for transfer applicants with less than two years of previous college experience. The minimum cumulative grade point average for students transferring from a 4-year institution is 2.0 and from a 2-year college, 2.5. Applicants with averages below the standard will be reviewed by the Committee on Admissions. Some of these applicants may be admitted under special conditions.

Transfer credit will normally be awarded for work done in accredited institutions. The courses must be academic and similar in nature to courses offered at Calvin College. A minimum grade of C- is required in each course to receive credit. No more than seventy semester hours of advanced credit will be allowed for work completed at an accredited community college. Furthermore, no matter how much work done at other institutions may be accepted, all students must complete their last year in residence and at least one upper-level course in their major to graduate from Calvin. For purposes of converting credit, a Calvin course unit is considered to be equivalent to 3.5 semester hours or 5.25 quarter hours.

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

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

## **Admission of International Students**

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

When international applicants are accepted for admission, they will be sent a formal letter of admission by the Director of Admissions. The next step for the applicant is to show sufficient evidence of financial support for college costs. If this support level is demonstrated, a tuition deposit ranging from 25-60% of the first year costs is required. Upon receipt of the specified deposit, the Certificate of Eligibility (I-20) will be forwarded to the student, who should then make application for a student visa immediately with the nearest United States Consul.

Applicants for whom English is a second language must have an adequate command of English as demonstrated by their performance on the Test of English as a Foreign Language (TOEFL). The TOEFL is administered periodically throughout the world by the Educational Testing Service. (The TOEFL code number for Calvin College is 1095.)

The minimum TOEFL score for regular admission is 550. In certain situations, a student with a lower score may be admitted with a provision for offsite, intensive language training. Upon enrollment, international students must take English courses each semester until they have successfully completed English 100, a course required of all students for graduation. However, the college may require a locally-administered placement test and a subsequent review course in English as a Second Language prior to English 100 if the need is indicated by placement testing results. International students for whom English is a second language can satisfy the graduation requirement of foreign language study with their native language.

## **Admission Under Special Conditions**

Applicants with high school or college records or with SAT/ACT test scores that do not meet regular admission standards may be admitted on condition if there is other evidence of academic promise. Students who have not followed a college preparatory program in high school, particularly one including algebra and geometry, must make up such requirements before enrollment. Conditionally admitted students are required to participate in the Access Program and to take assigned placement tests, will receive special counsel, may register for no more than 4.25 course units including any Access

Program courses, and are advised to limit their involvement in extra-curricular activities. Conditions attached to admission must be completed during the student's first year.

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

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

## **Enrollment Deposit**

After students are admitted, they must confirm their acceptance by the payment of a deposit which is applied to their tuition.

For entering first-year students, a deposit of \$200 is required by May 1. For transfer students the deposit is required by June 1.

Former students of the college must apply for readmission. An admission deposit of \$200 must be received from readmitted students by August 15.

## **Entrance Examination Information**

Prospective first-year students are advised to take the entrance examination during the spring semester of their junior year or in the fall of their senior year. Candidates for entrance examinations must apply for them at least a month prior to the testing dates.

The American College Test (ACT) is normally given five times per year. Application forms are generally available from high school principals and counselors but may be requested from the American College Testing Program, Box 168, Iowa City, Iowa 52240. This test is also required by the State of Michigan for its competitive scholarship program.

Applicants not able to take the ACT may submit Scholastic Aptitude Test (SAT) results. Upon enrollment they will be required to take the ACT on campus. Application forms are generally available from high school principals and counselors but may be secured by students living east of the Rocky Mountains from the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540. Those who live in the Rocky Mountain states or farther west, including those from Western Canada and foreign countries of the Pacific area, should apply to the College Entrance Examination Board, Box 1025, Berkeley, California 94701.

## **Profile of Calvin First-Year Students**

The middle 50% of the first year students who enrolled at Calvin College in the fall of 1993 have the following academic profile:

High school grade point average: Between 3.10 and 3.75 (on a 4-point scale)

ACT Composite Score: Between 22.0 and 28.0

For those who submitted the SAT those ranges are:

SAT Verbal Score: Between 440 and 590

SAT Math Score: Between 490 and 660

The completion rate for entering first-year students is 60%; most finish a degree in four years carrying a normal course load.

## **Policies for College Credits or Exemptions**

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

1. *A grade of 3 or higher on an Advanced Placement (AP) Examination conducted by the College Entrance Examination Board. For more detailed information, please contact the Admissions Office.*
2. *A satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Entrance Examination Board.*
3. *The passing of special departmental examinations at Calvin College, as described on page 26-27.*
4. *A mark of 75 or higher in an Ontario Academic Course approved by the Calvin faculty. Please contact the Admissions Office for more information.*

Furthermore, students who have completed appropriate courses in high school may be exempted from certain college course requirements. This is possible in foreign language, mathematics, literature, and the sciences. Consult pages 59–62 for a description of the ways high school courses satisfy college requirements.

## **Nondiscriminatory Policy**

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

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

## **Enrollment in Seminary Classes**

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

## **Student Load and Classification**

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

Normal progress toward the degree for full-time students requires that a minimum of seven course units be earned per academic year. A more typical load is nine and one-quarter course units per year, which enables most students to complete degree requirements in four academic years.

Undergraduate students are classified as first-year students until they have earned seven course units of credit. Students with a minimum of seven course units of credit completed will be classified as sophomores; those with sixteen, as juniors; and those with twenty-five, as seniors. For the purposes of conversion, a course unit is considered to be equivalent to 3.5 semester hours or 5.25 quarter hours. Classification for the purpose of college records and registration will be revised at the beginning of each academic year.

## **Grading Systems**

Grades given during the regular semester are designated by letters A, excellent; B, good; C, average; D, just passing; F, failure; I, incomplete; W, authorized withdrawal; and N, unauthorized withdrawal.

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

Ordinary grades for the interim are H, honors; S, satisfactory; and U, unsatisfactory. These do not carry honor point values and are not averaged in the student's total

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

Graduate workshops are graded with S and U grades only.

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

Students may alter their schedules during the first week of classes without grades of W being recorded on their records. After that time, grades of W, authorized withdrawal, will be recorded if they leave courses with the written approval of their instructors by the end of the ninth week of the semester. 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 registrar and of one of the student deans 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. The original grade is not expunged from the record, but is noted as a repeated course. A student will not receive additional course credit for repeated courses.

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

## **Course Credit and Exemption Examinations**

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

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

Second, enrolled students may receive course credit by securing a satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Board. The minimum score for credit is that which corresponds to the final course grade of C on the tables published by the College Board.

Third, regularly enrolled students may meet any core requirement by departmental examination and may, except when the department deems this inappropriate, re-

ceive regular academic credit for any course by examination. However, such tests must be taken in lieu of registration for the course and may not be used as repeated courses. The student's performance on the examinations will be recorded on the student's record, and the student will be charged a \$15 fee for an exemption examination and \$45 for a credit examination. Students wishing to take departmental examinations should obtain forms from the Registrar's Office and submit them to the departments by October 1 if they wish to take the examinations during the fall semester and by February 15 for the spring semester.

## Academic Probation and Dismissal

Each student admitted to Calvin College is assumed to have the preparation, the desire, and the ability to make satisfactory progress toward a degree. In practice, however, some students do not make the progress expected of them. Such students are notified, offered special assistance and academic counseling, and given an opportunity to improve their records. Failing in that, however, they will be dismissed.

The records of all undergraduate students are reviewed after each semester, and the academic status of full-time students is determined according to the following schedule.

<i>Cumulative total of course units attempted<sup>1</sup></i>	<i>Minimum cumulative grade point average needed for continuation</i>	<i>Minimum cumulative grade point average needed for good standing<sup>2</sup></i>	<i>Minimum percent of attempted units which must be credited for good standing<sup>3</sup></i>
4.50 or fewer	1.0	1.5	66%
4.75-9.00	1.30	1.65	66%
9.25-14.25	1.45	1.75	68%
14.50-19.50	1.60	1.85	70%
19.75-24.75	1.75	1.95	72%
25.00-30.25	1.90	2.00	74%
30.50-35.75	2.00	2.00	77%
36.00 or more	2.00	2.00	80%

1. For purposes of determining academic standing, the number of courses attempted in any term is the number of courses for which the student was registered after the deadline for dropping courses in that term. Courses transferred from other colleges are counted in the cumulative total, but do not affect the grade point average.
2. Students receiving benefits from the Department of Veterans Affairs are placed on academic probation if their GPA falls below 2.0 and must within the next two semesters raise it to 2.0 in order to continue to be certified for such benefits. Such students must, prior to enrolling for the final four course units, have earned a cumulative grade point average of 2.0. If any student receiving veteran's benefits fails to come off probation within the prescribed probation period, the school will inform the Veterans Administration. That student will be informed in writing that the Veterans Administration has been notified. Veterans Administration Certification for Benefits
3. Credited units are those for which the student has earned credit towards a degree; this excludes any course for which the grade awarded was F, N, U, W, NC, CR, NR, IP, I, or II.

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

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

## **Student Rights and Student Records**

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

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

At the end of each term a grade report will be mailed to the home address of each student unless the student files a written request with the registrar that this not be done. Current students may obtain a copy of their complete academic records for a fee of 25 cents.

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

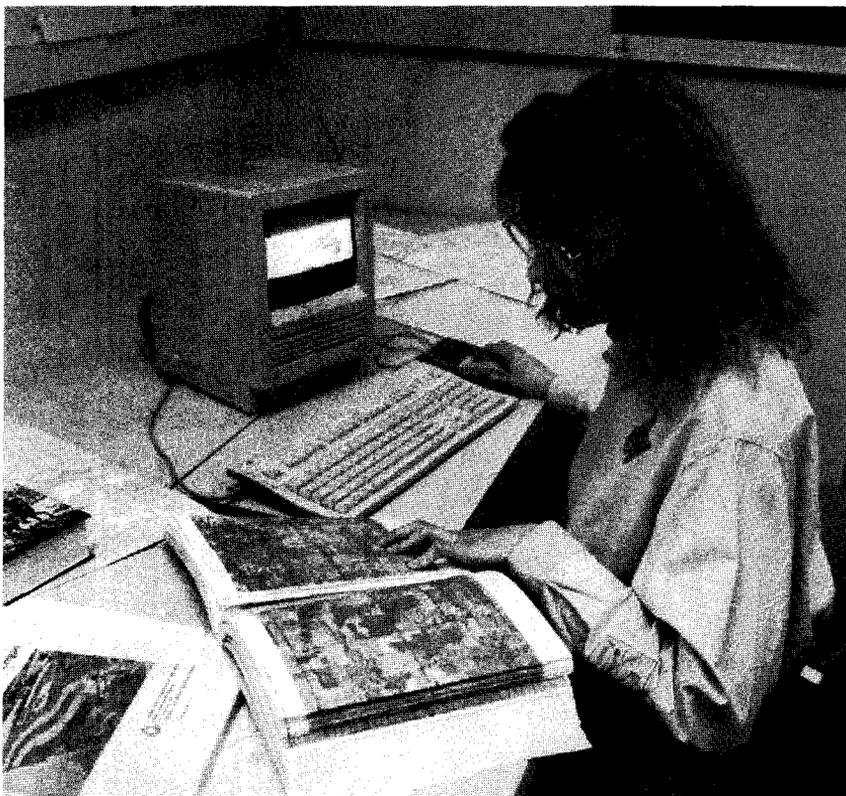
Any student found guilty of dishonesty in any examination or test or in written work of any character is subject to disciplinary action. The normal sanction is a failing grade on the piece of work involved, but a failing grade in the course is also a permissible sanction.

The student who wishes to appeal the action of a faculty member should follow the guidelines in the Student Protest and Appeals Procedure document, which can be obtained from the Provost's Office. The College has a policy statement on sexual harassment, copies of which can also be obtained from the Provost's Office.

## **Application for Degrees and Certificates**

In addition to the formal requirements for degrees described in the section on "The Academic Programs" beginning on page 59, students must satisfy certain technical requirements. Normally, they must complete their last year in residence at Calvin. They must also complete a Major Concentration Counseling Sheet and have it signed by their departmental advisor and must meet all of the conditions specified in that sheet. (These sheets normally are completed during the sophomore or junior year.) Finally, they must file a formal application for a degree at the Office of the Registrar not later than the beginning of the semester in which they expect to graduate. If they are completing teacher education programs, they must also file an application for Michigan certification at the same time they apply for a degree or not later than a semester before they complete the certification requirements.

Students desiring to graduate with an honors designation must apply for admission to a departmental honors program and meet those requirements and the general honors program requirements. Consult page 65 for details.



# FINANCIAL INFORMATION

## Tuition and fees

Tuition for the academic year is \$10,230; room and board on campus is \$3,710; and the estimated cost for textbooks and classroom supplies is \$400.

Students taking fewer than four course units of credit in a semester will be charged on a per-course basis. Those taking more than 4.75 course units will be charged at the per-course rate for the additional courses. The interim is considered a separate course for which there is no charge if the student either completes at least three and one-half courses in one semester or completes at least six non-interim courses during the academic year.

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

### BASIC CHARGES

Tuition, up to 4.75 course units a semester	\$5,115
Tuition, per course-unit rate	*1,330
Tuition, auditing, per course unit	665
Tuition, clinical years, B.S. in Nursing, academic year	12,275
Room and board, academic year	3,710

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

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

### DEPOSITS

Housing deposit	\$ 50
Physical education locker deposit	10

### SPECIAL FEES

Application fee	\$25
Directed teaching fee	20
Off-campus program fee	75
Examination fee (course credit)	45
Examination fee (exemption)	15
Individual music instruction	
One hour weekly lesson per sem.	360
Half-hour weekly lesson per sem.	180
For concentrates, per sem.	255
Late installment payment fee:	
1% per month on outstanding balance	
Late registration fee	25
Placement fee, for senior students	15
for alumni	25
Credentials/Recommendations, per set	2
Transcript fee	2
Vehicle registration fee	15
Visitor fee, per course	15
Residence Hall Social Fee	15

Payments for tuition, room and board are to be made as per the following payment schedule unless payment is rendered in full at the beginning of each semester or formal arrangements are made with the Financial Services Office for payment under a mutually acceptable schedule.

DUE DATE	TUITION	ROOM & BOARD		
<b>1st Semester</b>		21 meals	15 meals	10 meals
Aug. 19, 1994/Sept. 3, 4 1994*	\$1705	\$570	\$550	\$527
October 11, 1994	1705	570	550	527
November 3, 1994	1705	570	550	526
Total for 1st Semester	\$5115	\$1710	\$1650	\$1580
<b>Interim &amp; 2nd Semester</b>				
January 13, 1995**				
Interim	(***)	380	370	350
Second Semester	1705	540	520	497
	1705	920	890	847
March 10, 1995	1705	540	520	497
April 21, 1995	1705	540	520	496
Total for 2nd Semester	5115	2000	1930	1840
<b>Two Semesters &amp; Interim</b>	\$10,230	\$3710	\$3580	\$3420

\* Validation date for upperclass students/registration dates for first-year students

\*\* First day of interim classes/validation date for second semester

\*\*\* See explanation of interim charges above.

The balance for total tuition, room and board charges is reduced by all financial aid credits a student receives for the semester. Any balance due from the students will be divided in thirds. The three payments will be due as per the payment schedule due dates. Accounts not paid on time are subject to a late payment fee of 1% per month on the outstanding balance. A penalty of \$50 is charged students who have not paid their bills in full, unless arrangements are made with the Financial Services Office by November 3 in the first semester and April 21 in the second. **Students whose accounts are not paid in full by these dates or who have failed to make satisfactory arrangements with the Financial Services Office will not be allowed to register for the next semester. Also, transcripts are not issued for students with past due accounts.**

Advance tuition deposits of \$200 are required from all prospective first-year and transfer students. Prospective first-year students must pay this deposit by May 1, and transfer students must pay this deposit by June 1. Deposit refund requests received from first-year students before May 1 will be honored; transfer students must submit a refund request before July 1. Students applying for the interim or the second semester must make the appropriate deposit by December 1 and must apply for a refund before January 1.

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

Dually-enrolled students are individuals who are still attending high school but are concurrently enrolled in college courses. Dually-enrolled students may take up to two college courses per semester at a reduced course rate that is approximately one-third the normal per-course tuition amount. For 1994-1995 the dually-enrolled per-course tuition rate is \$445. Dually-enrolled students who are taking more than two college courses in a semester will be charged the regular course rate for the additional courses. Tuition charges for dually-enrolled students are due in full at the beginning of each semester unless alternative arrangements are made with the Financial Services office.

## **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 ministry shares, and (3) need-based scholarships and grants for students who are not eligible for state or federal grants or who need more scholarship and grant assistance than state and federal programs provide.

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

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

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

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

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

Students who wish to receive financial aid must be meeting the normal standards for continuation as a student. Thus, to receive financial aid a student must have the minimum cumulative grade point average needed for continuation and the minimum number of credits completed as described in the section "Academic Probation and Dismissal" on page 27. A statement giving more complete information about academic progress requirements for financial aid applicants is sent to all financial aid recipients. A copy of this statement is also available from the Financial Aid Office upon request.

## DENOMINATIONAL GRANTS

Students whose families are members of the Christian Reformed Church and who contribute regularly to Calvin College through denominational ministry shares receive a Denominational Grant. The amount of the grant is determined in part by the distance between the student's home and the college as measured in a direct line.

The home of an unmarried student under 24 years of age is considered to be that of his or her parents. If a student's parents are not members of the denomination, the grant is based on the location of the Christian Reformed Church of which the student is a member. Students who are married or 24 or older receive the grant based on their permanent residence.

Out-of-state students who meet the residency requirements for the Michigan Competitive Scholarship or Tuition Grant are considered Michigan residents for purposes of the Denominational Grant. When the need of a student is met by the Michigan Competitive Scholarship or Tuition Grant, the Denominational Grant is reduced to keep the total amount of aid within the maximum permitted by state regulations.

The Denominational Grants for 1994-95 are:

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

## ACADEMIC SCHOLARSHIPS

Scholarships are awarded to incoming students to encourage good students who are likely to do superior work to enroll at Calvin and to upperclass students to encourage superior academic performance. Most scholarships are granted on the basis of the student's academic record and potential, but in some cases other factors such as program of study, financial need, and other designated criteria are taken into consideration. More than 300 scholarships are awarded annually to first-year students and more than 600 to upperclass students. Individuals may be considered for a named

scholarship or departmental scholarship in addition to one of the general college scholarships described below.

### **General College Scholarships**

Incoming first-year students are considered automatically for the general college scholarships described below on the basis of the information received at the time of admission and are not required to file a separate scholarship application form except as noted. For maximum consideration, students must be admitted by February 1.

A number of changes have been made in general college scholarships in recent years. The following describes the scholarship program as it applies to first-year students entering Calvin in 1994-95. Students who began Calvin earlier should refer to the catalog for the year they entered for a description of the features that apply to their scholarships.

The Calvin National Merit Scholarship is a four-year scholarship and is renewable for three years, as long as the recipient continues to attend Calvin College. The Presidential, Dean's, Faculty Honors, and Honors Scholarships are available for four years as well if the recipient has the cumulative grade point average required. For students beginning Calvin in 1994-95, the grade point averages required for renewal are: 3.50 for the Presidential Scholarship, 3.40 for the Dean's Scholarship, 3.30 for the Faculty Honors Scholarship, and 3.20 for the Honors Scholarship. Presidential Scholarship recipients with a grade point average between 3.40 and 3.49 will receive the Dean's Scholarship for the following year; both Presidential and Dean's Scholarship recipients with a grade point average between 3.30 and 3.39 will have their scholarship renewed as a Faculty Honors Scholarship; and recipients of Presidential, Dean's, and Faculty Honors Scholarships with a grade point average between 3.20 and 3.29 will have their scholarship renewed as an Honors Scholarship. The grade point average used to determine renewal is the average at the end of second semester for first-year students and the average at the end of the interim for others.

Factors considered in awarding Presidential, Dean's, Faculty Honors, and Honors Scholarships include the student's high school grade point average, class rank, ACT or SAT scores, and involvement in, leadership of, and honors received for participation in activities outside the classroom. Typically, a grade point average of 3.5, an ACT composite of 25, or combined

SAT scores of 1000 are the minimum qualifications for any of these scholarships. Students selected are awarded the best scholarship for which they qualify.

**Calvin National Merit Scholarships.** Calvin awards National Merit Scholarships to all National Merit Finalists who have a high school grade point average of 3.5 or better, have designated Calvin as their first-choice college, and are not selected to receive another scholarship through the National Merit Corporation. For students beginning in 1994-95, the scholarship is a \$5,000 award.

**Presidential Scholarships.** Scholarships of \$3,500 each are awarded to the top 50 or 60 incoming first-year students who do not receive a Calvin National Merit Scholarship.

**Dean's Scholarships.** More than 75 scholarships of \$2,800 each are awarded to incoming first-year students who demonstrate outstanding academic achievement and potential but have not been selected to receive a Presidential Scholarship.

**Faculty Honors Scholarships.** Scholarships of \$2,000 each are awarded to more than 100 first-year students with excellent academic records. These scholarships are awarded automatically to students who rank first in their high school class if they have a grade point average of 3.50 or higher with an ACT composite of 25 or higher, or combined SAT scores of 1000 or higher and to others based on the criteria described earlier.

**Honors Scholarships.** Scholarships of \$1,200 are awarded to approximately 125 or more of the incoming first-year students who are not selected to receive one of the above scholarships.

**Academic Achievement Awards.** Academic Achievement Awards are awarded in multiples of \$500 to students who do not presently have one of the above scholarships and earn a cumulative grade point average of 3.40 or higher, and to those who have an Honors, Faculty Honors, or Dean's Scholarship and earn a cumulative grade point average that is significantly higher than required for renewal of their scholarship.

Awards of \$500 are granted to those who 1) do not have one of the above scholarships

but have a cumulative grade point average between 3.40 and 3.54, 2) have an Honors Scholarship and a cumulative grade point average between 3.50 and 3.69, or 3) have a Faculty Honors Scholarship and a cumulative grade point average between 3.70 and 3.79, or 4) have a Dean's Scholarship and a cumulative grade point average of 3.80 or higher.

Awards of \$1,000 are granted to those who 1) do not have one of the above scholarships but have a cumulative grade point average between 3.55 and 3.69, or 2) have an Honors Scholarship and a cumulative grade point average between 3.70 and 3.79, or 3) have a Faculty Honors Scholarship and a cumulative grade point average of 3.80 or higher.

Awards of \$1,500 are granted to those who 1) do not have one of the above scholarships but have a cumulative grade point average between 3.70 and 3.79 or 2) have an Honors Scholarship and a cumulative grade point average of 3.80 or higher.

Awards of \$2,000 are granted to those who do not have one of the above scholarships but have a cumulative grade point average of 3.80 or higher.

**Scholarships for Transfer Students.** Calvin awards scholarships of \$2,400, \$1,600, and \$850 to prospective transfer students based on their academic record and potential to be successful at Calvin. The primary criterion is the student's academic record at their previous college, but in some cases, especially those transferring with one year or less of college experience, the student's high school record and test scores are considered as well. A previous college grade point average of 3.50 or higher is required for consideration of the scholarships. The \$2,400 scholarship is renewed with a cumulative grade point average of 3.50 or higher; the \$1,600 scholarship requires a 3.35 for renewal, and the \$850 scholarship requires a 3.20.

**Calvin Mosaic Scholarships and Multicultural Scholarships.** In an effort to develop a community that celebrates cultural diversity and a student body that is more culturally diverse, Calvin College has developed two scholarships, Mosaic Scholarships and Multicultural Scholarships. Many recipients are ethnic minority students, but some scholarships are awarded also to majority students from ethnically diverse backgrounds.

Up to ten Mosaic Scholarships are awarded each year to students with excellent academic records and potential for college

whose ethnic, cultural, and/or socio-economic background will contribute to a more culturally diverse student body at Calvin. Awards are in the amount of \$3,500 per year, are awarded in addition to the Honors, Faculty Honors, Dean's, Presidential, and National Merit Scholarships for those who qualify, and are renewable for those who maintain a cumulative grade point average at Calvin of 3.20 or higher.

Multicultural Scholarships of \$1,200 each are awarded to all prospective first-year North American ethnic minority students who have a high school grade point average of 3.0 or higher, are granted regular admission to the College, and are not selected to receive a Mosaic Scholarship. Those who have the grade point average required but are not granted regular admission are reviewed for the scholarship individually. For transfer students who are ethnic minorities, a grade point average of 3.0 or better is required in their previous college work. Scholarships are renewed for up to three additional years for students who maintain a cumulative grade point average of 2.60 or higher at Calvin.

**Stewardship Awards.** Approximately 75 one-time Stewardship Awards of \$600 each are awarded to first-year and transfer students each year. Selection is based on the applicant's written demonstration of his or her stewardship of specific gifts and talents in two or more areas of activity such as music, art, drama, student government, school publications, church involvement, and community service. A clearly stated rationale for involvement, as well as breadth of involvement are criteria for selection. Applicants must have a minimum high school grade point average of 3.2 and be in the top half of the entering first-year class.

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

#### **Named Scholarships Funded by Donors**

A number of scholarships and grants have been established by donors to support the College's scholarship program and to provide

recognition and financial support to students who meet the eligibility criteria described. Application procedures vary from one scholarship to another and are included in the description of each scholarship. For those scholarships that require an application, the deadline for prospective first-year students is February 1 and for others is March 1. For all scholarships where financial need is considered, an application for financial aid is required as well.

**Calvin Alumni Scholarships.** Scholarships funded by the Calvin Alumni Association are awarded to approximately 16 incoming first-year students from the United States and Canada. These scholarships, of \$600 each, are awarded to students with good academic records (3.0 or higher) and are based on need. Preference is given to students who do not receive one of the other scholarships awarded by the College. No separate scholarship application is required.

**Calvin Alumni Minority Scholarships.** Each year the Calvin Alumni Association provides funds for scholarships for North American ethnic minority students. Scholarships are awarded to both prospective and returning students. Primary factors in the selection are the student's academic record, motivation, character, potential for success at Calvin, and financial need. For 1994-95, six scholarships were awarded in the amount of \$1,250 to \$1,500 each. No separate application is required.

**Clarence and Anne Beets Scholarships.** Dr. William C. (Clarence) and Mrs. Anne Beets have contributed a gift to Calvin College, the income from which is used to provide two scholarships of \$1,400 each. Dr. and Mrs. Beets are interested in helping students who have been successful at Calvin and have the potential and motivation to continue to be successful but lack the financial resources to meet all of their expenses. To be considered for a scholarship a student must be entering the junior or senior year, demonstrate financial need, be making normal progress toward a degree, and have a cumulative grade point average of 2.5 or higher. No separate scholarship application is required.

**James F. Beré Memorial Scholarship.** This scholarship has been established in memory of Mr. James F. Beré, an alumnus and longtime supporter of Calvin College. It is established to carry out his deeply held belief that racial

and ethnic minorities should have increased opportunities to pursue a Christian higher education. This is a renewable scholarship normally awarded during the senior year in high school and renewed for up to three years for those who meet the renewal criteria. Selection is based on the student's academic record, potential for college, cultural background, potential to contribute to the cultural diversity at Calvin, and financial need. A high school grade point average of 3.0 or higher is required for consideration, and a Calvin grade point average of 2.5 is required for renewal. One scholarship of \$2,000 was awarded to a first-year student for 1994-95. No separate scholarship application is required.

**Paul Beré Memorial Scholarship.** The college has received a gift from Mrs. Jeanne L. Beré in memory of her late husband, Paul Beré, the income from which is used to award one scholarship of \$500 or more each year. The scholarship is awarded to a prelaw student entering the junior or senior year, with primary emphasis on an evaluation of academic performance and potential. Need is a secondary factor in the selection. Apply through the Financial Aid Office.

**Berkowitz Scholarship.** Mr. and Mrs. Hyman Berkowitz of Wyoming, Michigan have established this scholarship in gratitude for all that God has given them. It is their philosophy that helping others is not only a duty but a privilege. This scholarship is designed for students with a physical handicap or learning disability. A grade point average of 2.5 or higher is required for entering freshmen; a minimum of 2.0 or higher is required for transfers and returning students. Financial need is also considered. Two scholarships of \$1,500 each were awarded for 1994-95. Prospective students who wish to be considered for this scholarship should write a letter of application giving information about their qualifications for the scholarship to the Financial Aid Office. Returning students are considered automatically; no separate scholarship application is required.

**Robert and Marjorie Boot Scholarship.** Mr. and Mrs. Robert and Marjorie Boot of Kalamazoo, Michigan have established this scholarship because of their desire to return part of their blessings for use by future generations. Recipients must be returning students with a cumulative grade point average of 3.0 or higher and must demonstrate a love of (1)

God, our only hope in life and in death, (2) Family, with whom we learn to share this love, and (3) America, where we can worship Him and can pursue our goals according to our ability and ambition. Financial need is also considered. One scholarship of \$1,600 was awarded for 1994-95. Apply through the Financial Aid Office.

**J. Russel Bouws/Russ' Restaurant Scholarships.** A scholarship fund has been established in honor of Mr. J. Russel Bouws, founder of Russ' Restaurants in Holland, Michigan, by Mr. Howard De Haan, owner of the franchise for Russ' Restaurants in Kent County. Scholarships of \$500 each are awarded to students at Calvin who are employed by one of the Russ' Restaurants in Kent County. Prospective as well as current students are considered. Selection criteria include the student's academic record, character, motivation, financial need, and length of service with Russ'. Eight scholarships were awarded for 1994-95. Application forms are available in January at participating Russ' Restaurants in Kent County.

**Dr. and Mrs. Harvey J. Bratt Medical Scholarships.** Harvey and Fran Bratt, medical doctor and registered nurse, respectively, have established a scholarship for worthy young people who plan to pursue a medical career and are in need of financial help. Dr. and Mrs. Bratt are both alumni of Calvin and have established the scholarship out of gratitude to the college for what it has meant to them and to God for what He has done for them. Two scholarships of \$1,200 each were awarded for 1994-95. Eligibility requirements for the scholarship include: unquestioned Christian commitment, intention to enter a medical career, a cumulative grade point average of 3.0 or higher, and evidence of financial need. Applicants must be entering the junior or senior year at Calvin. Other factors that may be taken into consideration are: interest in medical missions, interest in service to the poor and needy, and ethnic minority status. Apply through the Financial Aid Office.

**Calvin College Minority Scholarships.** Gifts have been received from constituents and friends of the college to fund this scholarship program for North American ethnic minority students. To be eligible for an award from this fund, candidates must have a grade point average of 2.5 or higher and must demonstrate financial need. Candidates for renewal are

given first consideration. Normally, four or five scholarships of \$1,500 each are awarded each year. No separate scholarship application is required.

**The Chrysler Minority Scholarship.** The Chrysler Corporation provides Calvin College funds to award scholarships to promising ethnic minority students who are residents of Michigan and plan to pursue a career in business or education. Four scholarships of \$2,500 each are awarded on the basis of financial need to one student in each class. No separate scholarship application is required.

**De Groot Family Scholarship.** Mr. Amos J. De Groot of Downey, California has established this scholarship to assist the College in its responsibility to provide educational opportunities to minority persons and in its efforts to become a Christian community that reflects and values cultural and racial diversity. Scholarships are available to North American ethnic minority students who are entering the junior or senior year at Calvin, have a cumulative grade point average of 2.5 or higher and are pursuing or planning to pursue a program that will lead to a career of service to disadvantaged ethnic minority families or individuals. It is expected that one scholarship of \$1,200 will be available for 1995-96. Apply through the Financial Aid Office.

**Gerald and Joyce De Nooyer Family Scholarship.** This scholarship has been established by Mr. and Mrs. Gerald and Joyce De Nooyer of Kalamazoo, Michigan out of thankfulness for all the blessings God has given them. It is given with the hope that it will help equip and strengthen young people of the future for a purposeful Christian commitment to their generation. The scholarship is a one-year scholarship for students entering their first year at Calvin. Selection is based on evidence of Christian commitment and demonstrated leadership ability in high school, church, or community activities, and requires a high school grade point average of 3.3 or higher. One scholarship of \$1,500 was awarded for 1994-95. No separate scholarship application is required.

**Dr. Paul and Mrs. Doris Dirkse Health Care Scholarship.** Dr. and Mrs. Dirkse have provided the college with a fund, the income from which is used to award scholarships to prospective juniors and seniors pursuing preprofessional courses in medicine, dentistry,

nursing, physical therapy, and related professions and paraprofessions. Six scholarships of \$1,600 each were awarded for 1994-95. Selection criteria include vocational interest, academic record, character, and need. Apply through the Financial Aid Office.

**Mary Cannon Dively Scholarship.** Ms. Mary Cannon Dively of Grand Rapids, Michigan has provided the College with funds for scholarships. Ms. Dively taught in Grand Rapids area schools for more than 40 years and believes strongly in the value of education. With this scholarship she wishes to help worthy, needy students with their college expenses. Candidates must be entering the sophomore, junior, or senior year at Calvin, must have a 3.0 grade point average or higher, and qualify on the basis of financial need. One scholarship in the amount of \$1,600 was awarded for 1994-95. No separate scholarship application is required.

**Emerson Minority Scholarship.** Each year Calvin College receives a gift from Mr. and Mrs. James Emerson to be used for scholarships to North American ethnic minority students. Three scholarships of \$1,400 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 first-year students. A minimum grade point average of 2.5 is required for consideration. No separate scholarship application is required.

**Farmers Insurance Group Scholarship.** Each year the Farmers Insurance Group of Los Angeles, California, provides the college with a gift of \$2,400. This is to be used to award scholarships to second-, third-, or fourth-year students in mathematics or business administration. Financial need is a primary factor in selecting a recipient; however, an academic record of C+ or better is also required. Apply through the Financial Aid Office.

**Grand Rapids Foundation Scholarship.** As a result of a bequest by the late Stephen D. Lankester to the Grand Rapids Foundation, scholarships of \$500 to \$750 each are available each year to prospective and returning students from Kent County. The primary purpose of this program is to provide assistance to students with good academic records (3.0 or better) who have financial need. Recipients of this scholarship who wish to be considered for re-

newal must reapply each year. Apply through the Financial Aid Office.

**Hearst Foundation Scholarship.** Funds for this scholarship are provided by the Hearst Foundation of New York which was established by publisher and philanthropist William Randolph Hearst. The scholarship is a reflection of his priority to "programs to aid poverty-level and minority groups." The scholarship is a renewable scholarship awarded during the senior year in high school and renewed for up to three years for those who meet the renewal criteria. Selection is based on the student's academic record, potential for college, cultural background, potential to contribute to cultural diversity at Calvin, and financial need. Preference is given to students who have participated in Calvin's Entrada Program. A high school grade point average of 3.0 is required for consideration, and a Calvin grade point average of 3.0 is required for renewal. One scholarship of \$2,000 was awarded for 1994-95. No separate scholarship application is required.

**Heritage Class Scholarship.** Members of Calvin College graduating classes of more than 50 years ago make annual donations to the Heritage Class Scholarship Fund to honor current Calvin students with scholarships. Recipients are selected on the basis of academic record, potential, motivation, Christian character, and financial need. A Calvin grade point average of 3.0 or higher is required. Two scholarships of \$1,200 each were awarded for 1994-95. No separate scholarship application is required.

**Roger W. Heyns Presidential Scholarships.** Each year four students, one at each class level, receiving Presidential Scholarships, are designated as Roger W. Heyns Presidential Scholars. These scholarships are in honor of Dr. Roger W. Heyns, a 1940 graduate of Calvin College, who had a long and distinguished career in education. His appointments included Professor of Psychology and Vice President of Academic Affairs at the University of Michigan, Chancellor of the University of California at Berkeley, and President of the American Council on Education. Funds for the scholarships are provided by the William and Flora Hewlett Foundation where Dr. Heyns served as president from 1977 through 1992. No separate scholarship application is required.

**Dr. Roger A. and Bradley J. Hoekstra Memorial Scholarship.** A gift designated to provide student scholarships has been received from Mrs. Janice Veenstra in memory of her late husband Roger and son Bradley. Two scholarships of \$1,600 each are awarded to upperclass students who plan to pursue the study of medicine. Selection is based primarily on the student's academic record and potential, although financial need is also taken into consideration. Apply through the Financial Aid Office.

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

**Dr. Harry Kok Memorial Scholarship.** Two scholarships of \$1,600 are presented each year, in memory of Dr. Harry Kok, to juniors for use in the senior year at Calvin College. The award is given primarily for achievement in scholarship, although other factors such as financial need, will be taken into account. Apply through the Financial Aid Office.

**Loranna Konrad Memorial Scholarship.** This scholarship has been established by Dr. Walter Konrad of Grosse Point Farms, Michigan in memory of his late wife, Loranna, to benefit students attending Calvin who do not come from Dutch or Reformed ethnic or religious backgrounds. The scholarship is a one-year award for students entering their first year at Calvin. In addition to considering ethnic and religious background, a high school grade point average of 3.0 or higher is required. One scholarship was awarded for 1994-95 in the amount of \$1,200. No separate scholarship application is required.

**Leonard M. Krull Scholarship Aid Fund.** As a result of a bequest to Calvin College by the

late Leonard M. Krull of Westborough, Massachusetts, two scholarships are available each year to prospective first-year students from the Whitinsville, Massachusetts, area. The scholarships range from \$450 to \$900 with selection based on the student's academic record, ACT or SAT scores, and, in some cases, on financial need. The \$900 scholarships are renewable for up to four years. Selection is made by the Committee on Scholarships and Financial Aid of the college in consultation with a representative committee from the Whitinsville area. No separate scholarship application is required.

**The McGregor Fund Scholarship.** This scholarship was established by the designation of a McGregor Fund Trustee, Mr. Eugene A. Miller, for the purpose of providing assistance to financially needy students who have demonstrated academic ability. Candidates for this scholarship must be entering the sophomore, junior or senior year, have demonstrated financial need, and have a cumulative grade point average of 3.0 or higher. No separate scholarship application is required.

**The Menninga Memorial Scholarship.** This scholarship was established in memory of Henry and Minnie Menninga and Shirley Menninga by Mr. and Mrs. Roger Warnshuis, Jr. New scholarships will be awarded to prospective first-year students, and will be renewed for the sophomore, junior, and senior years. Candidates must demonstrate financial need, Christian character, personal integrity, and motivation. A cumulative high school grade point average of 3.0 or higher is required and a grade point average of 2.5 is required for renewal candidates. No separate scholarship application is required.

**Mephibosheth Scholarship.** A scholarship has been established by an anonymous donor to provide scholarship assistance to students with physical disabilities. The donor, who has physical disabilities himself, has established this fund out of gratitude for all that God has done for him and has named it the Mephibosheth Scholarship because, as he indicates, "he too has dined at the King's table" (cf. II Samuel 9:13). First consideration for scholarships is given to prospective first-year and transfer students who have a physical impairment that is likely to continue indefinitely and who have the academic ability to be admitted as regular students. Preference is given to students who have financial need and to those who have an impairment that makes employment during the academic

year less likely. Normally, one new scholarship of \$1,500 will be awarded each year. Scholarships are renewable for those who maintain satisfactory academic progress as required for other financial aid programs. Prospective students who wish to be considered for this scholarship should send a letter of application to the Office of Scholarships and Financial Aid describing their qualifications for the scholarship. No separate scholarship application is required for returning students.

**Ben M. Muller Memorial Scholarship.** The Muller family of Grand Rapids, Michigan has established this scholarship for graduates of Grand Rapids Christian High School who would otherwise not be able to attend Calvin because of cost. The scholarship is a two-year scholarship awarded for the first year to a student who has been granted regular admission to Calvin, and renewed for the second year for first-year recipients who are in good standing and making satisfactory academic progress. Preference is given to ethnic minority students. One scholarship was awarded for 1994-95 in the amount of \$1,200. No separate scholarship application is required.

**Amos Nordman Scholarship.** Funds have been received from the Amos Nordman Foundation Charitable Trust to be used for scholarships to students at Calvin College. Mr. Nordman was a resident of Marne, Michigan, and established a foundation that makes contributions to several colleges in Michigan for student aid. The scholarships are awarded to students who have a cumulative grade point average of 3.0 or better and are from families with limited income. One scholarship of \$750 was awarded for 1994-95. No separate scholarship application is required.

**Theodore J. Peters Scholarship.** A scholarship fund has been established by the late Mr. Theodore J. Peters, the income from which is used to provide scholarships to students from a number of West Michigan Christian High Schools. Each year one scholarship is awarded to a prospective student at each of the following Christian high schools: Calvin Christian, Grand Rapids Christian, Holland Christian, Kalamazoo Christian, South Christian in Cutlerville, Unity Christian in Hudsonville, and West Michigan Christian in Muskegon. The amount of the scholarship for 1994-95 is \$7,000, less the amount received from state and federal grant programs and from the college's Denominational Grant Program. Selection is

made by the high school on the basis of the student's academic achievement, Christian character, leadership, and participation in extracurricular activities. No separate scholarship application is required.

**Ryan Memorial Scholarship.** Mrs. Lynne Lehocky and her father, Mr. Peter Hovinga, have established a scholarship in memory of Mrs. Lehocky's son, Ryan, who was severely disabled from birth and passed away in 1984 at the early age of seven. During his lifetime, the Hovinga family became especially aware of the compassion and commitment evidenced by those who work with disabled children and have established the scholarship to recognize and encourage those who demonstrate such a commitment. Two scholarships of \$1,200 are awarded each year. Candidates for the scholarship must be entering the junior or senior year, have a cumulative grade point average of 3.2 or higher, and be planning to enter the Christian ministry or planning to work with disabled children. Other factors that will be considered include the student's character or commitment to the ministry or working with children who have disabilities as a lifelong commitment. Apply through the Financial Aid Office.

**SCORR Scholarship.** The Christian Reformed Church has authorized the Synodical Committee on Race Relations (SCORR) to provide scholarships of up to \$1,000 per year to North American ethnic minority students who are related to the Christian Reformed Church. Selection criteria include the student's academic record, financial need, and interest in serving God's Kingdom through the Christian Reformed Church. Returning students are considered as well as incoming first-year students. Apply through the Financial Aid Office.

**James E. Smith Presidential Scholarships.** Each year four students, one at each class level, receiving Presidential Scholarships, are selected as James E. Smith Presidential Scholars. These scholarships are in memory of James E. Smith who was a graduate of Calvin College and an active alumnus. He was president of the Calvin College Oratorio Society at the time he passed away unexpectedly in October 1991. The scholarships are funded by contributions from Gordon Food Service where Mr. Smith was a long-term employee as Director of Operations. No separate scholarship application is required.

**Spalink Memorial Missions Scholarship.** The Spalink family has established a scholarship fund in memory of John Spalink, Jr., which provides one scholarship of \$750 each year. Its purpose is to encourage superior students to enter missions. The scholarship is awarded to a student who shows a definite interest in a missionary vocation. The award is given primarily for academic achievement, although other factors, such as financial need, will be taken into account. Generally, members of the Christian Reformed Church who aspire to a career with that church's missions will be shown preference. Apply through the Financial Aid Office.

**Steelcase Foundation Scholarship.** The Steelcase Foundation of Grand Rapids, Michigan, offers scholarships totaling \$5,000 annually to applicants who are children of Steelcase employees. Typically scholarships of \$500 each are awarded to three first-year students and seven upperclass students. The recipients are selected by the Committee on Scholarships and Financial Aid of the college. Applicants are judged on the basis of scholastic ability, character, and need. Prospective students who want to be considered for this scholarship must send a letter of application to the Office of Scholarships and Financial Aid at Calvin. Returning students should complete the upperclass scholarship application.

**The Wilma Steketee-Bean Scholarship.** Mrs. Wilma Steketee-Bean remembered Calvin College among the charitable beneficiaries of her estate and created this scholarship. Mrs. Steketee-Bean expressed her desire but lack of opportunity to attend college when she was young. Her purpose for this scholarship is to help financially needy young men and women to have the opportunity she lacked to benefit from a college education. Two scholarships of \$1,500 or more will be awarded to high school seniors with financial need who are planning to attend Calvin College. Candidates for renewal must have a cumulative grade point average of 2.5 or higher. No separate scholarship application is required.

**Edward C. and Hazel L. Stephenson Foundation Scholarship.** Each year Calvin receives a gift from this foundation to be used for scholarships. For 1994-95, thirteen scholarships were awarded in amounts of \$1,200 each. No separate scholarship application is required.

**Sullivan Scholarship.** Each year Calvin receives \$1,000 from the Sullivan Scholarship

Fund Trust to be used for one or two scholarships to incoming first-year students. The scholarships are awarded to needy students from high schools in the greater Grand Rapids area. Selection is made on the basis of academic achievement, character, participation in extracurricular activities, and financial need. No separate scholarship application is required.

**The Edward and Jennie VanderBrug Memorial Scholarship.** Three scholarships are awarded annually from a fund set up by the VanderBrug family of Detroit, Michigan, in memory of Edward D. Vander Brug. The program is designed to recognize academically-capable North American ethnic minority students who have demonstrated potential for leadership in high school, in college, or in previous experience. The recipient must intend to pursue an education leading to full-time service in agencies or institutions related to the Christian Reformed Church. Awards are in the amount of \$2,000 a year and are renewable if the student's cumulative grade point average is 2.6 or higher, or if the grade point average for the previous year is 3.0 or higher. Need is not a requirement for the scholarship. Prospective students who want to be considered for the scholarship must send a letter of application to the Financial Aid Office. Returning students may apply by completing the upperclass scholarship application form.

**Joseph and Ralph Gelmer Vander Laan Memorial Scholarship.** This scholarship fund was established by the Vander Laan family in memory of Joseph and Ralph Gelmer Vander Laan, who were brothers. One of the scholarships is awarded to a prospective junior or senior who is pursuing a program in the health professions, with preference given to those interested in missions or some other type of Christian service. The other scholarships are awarded to top students in any area. For 1994-95, five scholarships of \$1,600 each were awarded. Selection criteria include the student's academic record, character, and need. Apply through the Financial Aid Office.

**Gerald and Jessica Vander Wall Scholarship.** Dr. and Mrs. Gerald and Jessica Vander Wall of Grand Rapids have established this scholarship because of their desire to help deserving students obtain a Christian college education. Scholarships are awarded to returning students based on their academic record and financial need. A cumulative grade point average of 2.5

or higher is required to be considered. One scholarship of \$1,200 was awarded for 1994-95. No separate scholarship application is required.

**Vermeer Scholarships.** The Vermeer Charitable Foundation of Pella, Iowa has established two scholarships at Calvin. Each year four students, one at each class level, are designated as Vermeer Presidential Scholars and funds for these scholarships are provided by an endowment established by a gift from the Vermeer Foundation. A second scholarship, the Vermeer Charitable Foundation Scholarship is awarded each year to a senior at Pella Christian High School who is planning to attend Calvin the following year. Factors considered include Christian character, promise of growth, and participation and leadership in activities outside the classroom such as church, community, and extra-curricular school activities. A high school grade point average of 3.0 or higher is required for consideration, and a Calvin grade point average of 3.0 or higher is required for renewal. No separate scholarship application is required for either scholarship.

**Voetberg Scholarship for Students with Disabilities.** Mr. and Mrs. Robert Voetberg of Grand Rapids, Michigan have established this scholarship in honor of their son Mike, a physically disabled student who attended Calvin from 1987 to 1991. The Voetbergs' desire is to recognize other promising students who are physically disabled and assist them in meeting their educational expenses. Candidates must be permanently, physically disabled and must demonstrate the ability to do college-level work. Financial need is considered as well. Two scholarships of \$1,500 each were awarded for 1994-95. Prospective students who wish to be considered for the scholarship must send a letter of application describing their qualifications for the scholarship to the Financial Aid Office. No separate application is required for returning students.

**Charles and Anna Wabeke Memorial Scholarship.** Calvin has received a gift from Mrs. Ruth Heerspink, daughter of Mr. and Mrs. Wabeke, which has been used to establish a scholarship fund. Scholarships are awarded to upperclass students who are planning to enter full-time Kingdom service with preference given to those interested in missions. The student's academic record and faculty recommendations are primary factors in the selec-

tion (a grade point average of 3.0 or better is required) although financial need is considered as well. One scholarship of \$750 is awarded each year. Apply through the Financial Aid Office.

**The Samuel L. Westerman Foundation Scholarship.** Mr. Samuel L. Westerman established a foundation in 1971, and upon his death in 1984, his entire estate went to the Foundation. The Foundation graciously supports a wide range of worthy causes in education, arts and music, health, religion and science. Candidates for this scholarship must be entering the junior or senior year, demonstrate financial need and have a cumulative grade point average of 3.0-3.49. Recipients must be active in the Student Volunteer Service at Calvin or in other community or volunteer work. Apply through the Financial Aid Office.

**Dr. Morris Wilderom Scholarship.** The family of the late Dr. Morris Wilderom has established a scholarship in his memory to be awarded to students in medicine. Dr. Wilderom graduated from Calvin in 1931 and practiced medicine until his death in 1985. Candidates for this scholarship must be pursuing a pre-med program, entering the junior or senior year, and be in need of financial assistance. Other factors considered in the selection include the student's motivation, Christian character, and ability to contribute to the medical profession in future years. One scholarship of \$1,600 was awarded for 1994-95. Apply through the Financial Aid Office.

**Bernard and Carol Woltjer Family Scholarship.** This scholarship has been established by Mr. and Mrs. Bernard and Carol Woltjer of Jenison, Michigan to encourage graduates of Unity Christian High School in Hudsonville, Michigan to attend Calvin. Selection is based on high school grade point average (a minimum average of 3.0 is required), involvement and leadership in church, community, and school activities outside the classroom, and financial need. One scholarship of \$1,000 was awarded for 1994-95. No separate scholarship application is required.

**Woodlawn Christian Reformed Church Minority Scholarship.** Each year the Woodlawn Christian Reformed Church of Grand Rapids, Michigan, provides the college with funds to be awarded to North American ethnic minority students who are personally committed to

Jesus Christ and His Church. The amount of the scholarships, which can range from \$1,000 to \$2,000, depends on the amount of the student's need and the availability of other aid. A minimum grade point average of 2.5 is required. Prospective students who wish to be considered for the scholarship must send a letter of application describing their qualifications for the scholarship to the Financial Aid Office. Returning students should use the upperclass scholarship application form.

**Wilma Zondervan-Teggelaar Family Scholarship.** The family of Mrs. Wilma Zondervan-Teggelaar of Grand Rapids, Michigan has established this scholarship in her honor because of their desire to encourage students to attend Calvin who would otherwise not be able to attend because of cost. The scholarship is a two-year award with selection for the first year based on high school grade point average (a minimum average of 3.0 is required), involvement in service-related and other volunteer activities in high school, church, or community, and financial need. Scholarships are renewed for a second year for recipients who demonstrate evidence of scholastic diligence, are in good standing academically, and continue to qualify on the basis of financial need. One scholarship of \$1,200 was awarded for 1994-95. No separate scholarship application is required.

#### **Departmental Scholarships Funded by Donors**

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

#### **Alumni Association**

**Calvin Alumni Association Scholarships.** The Calvin Alumni Association awards up to six scholarships of at least \$1,400 each to students who have been active in volunteer work on and off the Calvin campus through membership and involvement in student and/or community organizations (where payment for services has been minimal or nonexistent.) Students who wish to qualify for these scholarships must also be able to articulate a connection between their volunteer activity and life

goals, and have a minimum cumulative grade point of 2.5. Candidates should secure an application from the Alumni Relations Office and return it by January 31. A team of Alumni Association Board members reviews the applications and interviews finalists during Homecoming weekend each February.

#### **Art Department**

**Edgar G. Boevé Art Scholarship.** Through the generosity of alumni and friends this scholarship honors Edgar G. Boevé for his contribution to the Art Department, the college, the denomination and the larger community as art teacher, the first chair of the Art Department, art consultant, artist and leader. Two scholarships of \$1,400 each are available for any art student enrolled in any art program. Selection will be made by the members of the Art Department based upon financial need, grade point average, and an essay describing interest, career goals and a Christian commitment. A grade point average of 3.0 in Art Department courses is required.

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

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

#### **Biology Department**

**The Martin and Frances Karsten Biology Scholarship.** This scholarship is provided by

a gracious bequest from the estates of Martin and Frances Karsten. Martin Karsten faithfully served Calvin College as professor of biology for thirty years and concentrated in the areas of botanical sciences. Candidates for this scholarship must be Biology majors entering the junior or senior year. Preference will be given to those concentrating in botany. Three scholarships of \$1,600 were awarded for 1994-95.

### **CAS Department**

**Ervin 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 \$600, 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.

**Calvin Media Scholarship.** Norman and Crystal Unema established this \$1000 scholarship, awarded to a student entering the junior or senior year and planning on a career in journalism, radio, or television broadcasting. Candidates for this award will be nominated and selected by the CAS Department.

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

**Ann Janssen Noteboom Scholarship.** This scholarship was established by William and Ann Noteboom. Dr. Ann Noteboom taught at Calvin for thirty-five years. Up to two awards of \$900 will be awarded annually to returning junior or senior majors who show outstanding promise in the areas of oral interpretation and/or public address.

**The John Miller Scholarship.** Rev. John Koole established this scholarship in honor of Mr. John Miller, who supported him in his love for

music and drama and assisted him financially in his Calvin education. One scholarship of \$1,000 or more will be awarded annually to returning junior or senior majors who demonstrate excellence in theatrical ability. Candidates for this scholarship will be nominated and selected by the CAS Department.

**Vande Guchte Award in Communication Disorders.** Presented by Dr. Marten Vande Guchte, this annual cash award will be given to an outstanding student who intends to enter the professions of speech-language pathology or audiology. The Communications Disorders program advisor will recommend a nominee to the Department on the basis of the student's academic record, Christian character, and commitment to service in the speech and hearing profession.

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

### **Chemistry Department**

**John A. Bolt Memorial Scholarship.** This scholarship has been established to honor John A. Bolt who was a Calvin graduate, a research chemist, and Director of Research for the American Oil Company. This scholarship recognizes his love for the field of science and his intense interest in encouraging young people to seek excellence in education. Candidates must be entering the junior or senior year, majoring in Chemistry or Biochemistry, and have a cumulative grade point average of 3.0 or higher. Preference will be given to those pursuing a career in teaching and/or research in the sciences. Two scholarships of \$1,900 each were awarded for 1994-95.

**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 are based on Christian character, personality, possible financial need, and

promise of growth. Candidates must be Chemistry majors entering the junior or senior year. One scholarship of \$1,700 was awarded for 1994-95.

**Dow Chemical Company Foundation Scholarship.** The Dow Chemical Company Foundation has established a scholarship of \$4,000 per year for four years to a first-year student who intends to major in chemistry or biochemistry. Eligible candidates must be U.S. citizens and have a sincere intent to continue in chemistry as a chosen career after graduation. A minimum grade of 'B' in each credited course at Calvin is required in order to continue the scholarship from year to year.

**Westerbeek Family Scholarship.** The Westerbeek Family has established this scholarship to encourage students in chemistry. Candidates must be majoring in Chemistry or Biochemistry, entering the sophomore, junior, or senior year, and have a cumulative grade point average of 3.0 or higher. There should be some evidence that the scholarship is needed to help meet educational expenses. One scholarship of \$1,200 was awarded for 1994-95.

**The Dr. and Mrs. Enno and Lucile Wolthuis Chemistry Scholarship.** Dr. Enno Wolthuis, Professor of Chemistry at Calvin College from 1949-1976, has established a scholarship fund for the benefit of chemistry majors who have an interest in pursuing a career in research or college-level teaching. Candidates must be Chemistry majors entering the sophomore, junior or senior year and must have a cumulative grade point average of 3.0 or higher. One scholarship of \$1,500 was awarded for 1994-95

### ***Economics and Business Department***

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

**John and Judith Bielema Economics and Business Scholarship.** The Bielemas are strong supporters of Christian liberal arts education, and

have provided this scholarship for a student entering the junior year in the Economics and Business Department who demonstrates promise of leadership and the ability to integrate Christianity in the chosen field of study. Financial need is a secondary consideration.

**Lawrence D. Bos, Sr. Family Scholarship.** This scholarship celebrates Mr. Bos's long career in the life insurance business in the Grand Rapids area. It has been established to recognize and encourage deserving students in the fields of business and economics to promote responsible Christian capitalism in their business life and in their contribution to the economic well-being of the community. Candidates must be entering their junior or senior year with at least a 3.5 average.

**The Margaret and Douglas Bush Family Scholarship.** The Bush family has provided the college with funds to encourage worthy students to prepare for positions in business and business education. Scholarships are awarded each year on the basis of diligence, character, commitment to service of the Lord and humankind, 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.

**James and Judith Chambery Scholarship.** The Chamberys have spent their careers in human services, particularly the care of chronically ill persons. They have established this scholarship to encourage the study of ethical questions facing the health care industry. The scholarship is for a student entering the junior or senior year pursuing a program that can lead to a career in health care management, health services administration, health care economics, or public health care policy.

**Gerald R. Rietberg Family Scholarship.** The family has established this scholarship for students who exhibit a commitment to the highest ethical and moral standards in pursuing a career that provides for the exercise of Christian leadership in business or public administration. Students must be entering the junior or senior year, majoring in business or public administration, and planning to participate in an internship or in the cooperative education program.

**Roels Minority Business Student Award.** An annual award is made available by Shirley and

John Roels to a North American minority student studying business or economics who shows leadership promise in one of these fields. The award will be based on a student's academic record, spiritual maturity, and potential for a career in business or economics.

#### **Jacob and Jennie Tuinstra Scholarship.**

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

#### **Herbert and Doris Vander Mey Scholarship.**

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

#### **Randall K. Vander Weele Memorial Scholarship.**

Randall Vander Weele was killed in an accident shortly after his graduation from Calvin College in 1981. His family and friends have established a fund to generate income for scholarships to be awarded to junior students for their senior year in a business major or a B.S. in Accountancy program. Criteria for selection include academic record and potential for Christian leadership in business.

#### **Kenneth J. Van Spronsen Memorial Scholarship.**

This scholarship has been established in memory of Kenneth J. Van Spronsen by his wife, family, and friends. Ken, a 1989 graduate of Calvin College, was ambitiously pursuing a business career when he was tragically killed in an automobile accident in October 1992. This award is intended to aid an upperclass student in pursuit of a business major or group major with an emphasis in business. Eligibility requirements include a minimum B-average and financial need. In addition, the student must exhibit leadership qualities as well

as initiative in pursuing a business career. A non-resident of Michigan is preferred.

### **Education Department**

#### **The Kevin Dale De Rose Memorial Scholarship.**

Kevin De Rose was killed in an accident his junior year at Calvin in 1989. His family and friends have established this scholarship in his memory to be awarded annually to a student who demonstrates a love for providing Christian service in non-academic areas of life. Candidates for this scholarship must be admitted to the teacher education program and have a cumulative grade point average of 3.0 or better. If there are several candidates, preference will be given to those with the greatest need. Preference will also be given to those planning to pursue a career in teaching English at the secondary level.

#### **The DeVries—Post Teacher Education Scholarship.**

Mr. John W., Jr. and Dr. Arden R. (DeVries) Post have established this scholarship to assist future educators in the teacher education program at Calvin College. Because of their special interest in minorities and persons with disabilities, the scholarship is directed first to an individual from either of these groups who demonstrates financial need. If there are no students who qualify on this basis, other students with a record of service to minorities or to those with disabilities will be considered. Two scholarships of \$1,000 each are awarded annually.

#### **Patti Morren Scholarship.**

This scholarship was set up by Jay and Kathleen Morren of Grand Rapids, in memory of their daughter Patti, who was mentally impaired. She passed away recently at the age of twenty-nine. The Morren's greatly appreciated the amount of love and compassion that was shown to Patti by her special education teachers. They want to assist a student who is qualified to work with children with disabilities. They also set up this scholarship to allow a student to experience college life, something their daughter Patti could never do. Each year one scholarship of \$1,200 is given.

#### **The Fred and Carol J. Vanden Bosch Scholarship.**

This scholarship, established by Mr. and Mrs. Fred Vanden Bosch, is provided to assist experienced Christian teachers to return to full- or part-time education in the Master of Education Learning Disabilities (LD) program at

Calvin College. To be eligible for the scholarship, a student must be a professing Christian teacher, must be committed to continuing in his or her profession, and must be enrolled for graduate credit in a minimum of two courses per semester. The recipient will be required to assist in laboratory components of the MAT-LD courses, must demonstrate potential for advanced academic scholarship, and demonstrate financial need based on criteria for financial aid. The scholarship is awarded annually in amounts not to exceed \$750. Applicants should contact Dr. Myra Kraker for additional information.

**George J. Van Wesep Memorial Scholarship.** Each year Mr. and Mrs. Richard De Vos of Ada, Michigan, provide Calvin with a gift of \$5,000 to be used for scholarships. The gift is given in recognition of Mrs. De Vos's father, Mr. George J. Van Wesep, who was a teacher/administrator in the public and Christian schools for more than fifty years. Because of Mr. Van Wesep's commitment to education, and to Christian education in particular, the scholarships are awarded to students planning to pursue education as a career. Scholarships are awarded to juniors and seniors, who have been accepted in the teacher education program, primarily on the basis of the student's academic record and potential for Christian service in education. Financial need is considered as a secondary factor. Five scholarships of \$2,000 each are awarded annually.

**The Vander Ark Family Scholarship.** The Vander Ark family, known as the teaching family, has funded a scholarship which is available to students who will be juniors or seniors in the teacher education program at Calvin. Candidates for this scholarship must have a cumulative GPA of 2.75 or higher and exhibit sound moral character, a strong commitment to Christian teaching, and a promise of expanding maturity. There should be some evidence of financial need. Preference will be given to relatives of the Vander Ark family upon notification to the Education Department that this relationship exists. Normally, two scholarships are awarded in the amount \$800 or more.

### **Engineering Department**

**The James Bosscher Engineering Scholarship.** Former students and friends of Dr. Bosscher have generously funded a scholarship in his name. Scholarships will be awarded to incom-

ing engineering freshman students who demonstrate outstanding academic achievement and potential. The number of awards and the value of each award will be determined by the amount of money available each year. The award for the first year is contingent on enrollment in a typical engineering program at Calvin. Scholarships are renewable for the sophomore year in the engineering program based on the first year's college performance, including the achievement of at least a 3.0 grade point average. Special consideration will be given to North American ethnic minority students. To be considered for the Bosscher Scholarship students need only apply for admission to the college by February 1. They must also indicate engineering as their primary interest. Five \$1,100 scholarships were awarded for 1994-95.

**Calvin Engineering Scholarship.** The Kamstra family has established a scholarship in honor of the late Gordon Kamstra. Candidates should be entering the junior year as full-time students in the B.S.E. program in Engineering. A cumulative grade point average of 3.0 or higher is expected, and a full year of prior study at Calvin is required.

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

**Greiner, Inc. Architectural/Engineering Scholarship.** Greiner, Inc. has established a scholarship of \$1,000 per year to encourage ethnic minorities to pursue architecture or engineering as a career. The candidate must be a full-time student entering the sophomore, junior, or senior year in a B.S.E. program in Engineering or an A.B. program in Architecture (not

yet established at Calvin). A cumulative grade point average of 2.5 or higher and full-time student status are expected. Recipients must have completed a full year at Calvin prior to receiving the scholarship and should be U.S. citizens or permanent residents of the United States.

### **English Department**

**Steve J. and Viola Van Der Weele Scholarship.** The family of Steve Van Der Weele, who taught at Calvin College from 1950 to 1986, has provided for an award of \$1,200 or more to be given annually to a returning junior or senior English major who shows evidence of coming to maturity through a liberal arts education and of enriching the Christian community through those studies. Academic excellence and Christian character are the primary criteria; need may be considered as a secondary criterion. The English Department will designate the recipient of the award.

### **Geology, Geography, and Environmental Studies Department.**

**Clarence Menninga Field Course Scholarship.** A scholarship fund, established in honor of Calvin's first geology professor, Clarence Menninga, provides annually a \$500 scholarship to a student enrolling in a summer geology field course.

### **History Department**

**Earl Strikwerda Memorial Scholarship.** Memorial contributions from the relatives and friends of Professor Earl Strikwerda have enabled the History Department to honor the memory of their former colleague with an annual scholarship to a junior history major. One \$1,500 scholarship was awarded for 1994-95.

### **Music Department**

**The Leo Cayvan Award in Strings.** An annual award of \$720 by Mrs. Leo Cayvan is offered to an outstanding player of violin, viola, cello, or bass viol entering the junior or senior year at Calvin College who has attended Calvin at least one year. This award is in memory of her late husband, Mr. Leo L. Cayvan, a great benefactor of the Music Department. Selection shall be made on the basis of proficiency in performance on the instrument, participation in an appropriate faculty-directed ensemble, and

grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The James and Helen De Jonge Voice Award.** An annual award of \$720 is given by James and Helen De Jonge to an outstanding voice concentrate entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants shall be judged on the basis of proficiency in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private voice lessons for credit during the year the scholarship is used (except for music education students during student teaching).

**The De Vries Church Music Award.** An annual award of \$720 is given by Douglas De Vries to an outstanding student who has an interest in and aptitude for a career in church music. The award is for students entering the sophomore, junior, or senior year at Calvin College who have attended Calvin at least one year. Applicants will be judged by the following criteria: proficiency in performance as a singer or keyboardist, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The Harold Geerdes Violin Award.** Contributions have been received by the Music Department in honor of Harold Geerdes, former conductor of the Calvin College Orchestra, the Oratorio Society, and Professor of Music. Interest from this fund provides an annual award of \$720 to an outstanding violin student entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance as a violinist, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The Harold and Gladys Geerdes String Award.** Contributions have been received for the establishment of a string award. Interest on this amount will provide an award of \$720 to an outstanding string player entering the sophomore, junior or senior year at Calvin College. The recipient should have attended Calvin at least one year, although consideration may also be given to outstanding entering freshmen. Applicants shall be judged on the basis of proficiency in performance as a string player, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Consideration will also be given to those active in a chamber music ensemble. Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**John E. and June B. Hamersma Scholarship in Organ.** For the purpose of encouraging the serious study of the organ and its literature, an award of \$1,200 is offered to an entering first-year student with a high school grade point average of 3.5 or better who wishes to major in organ or in church music with an emphasis in organ. The applicant is expected to audition by means of performance on a keyboard instrument, preferably in person though tape is permissible. The scholarship is renewable for the sophomore year if a Calvin grade point average of 3.2 or better is achieved and approval to major in organ or church music has been granted by the Music Department.

**The Helene Hekman Gezon Voice Award.** Contributions have been received by the Music Department in memory of Mrs. Gezon, a prominent contralto soloist with the Calvin College Oratorio Society. Interest from this fund provides an annual award of \$720 to an outstanding voice student entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants shall be judged on the basis of proficiency in performance as a singer, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The Henry and Nellie Holtvluwer Music Award.** Contributions have been received from J. Henry and Leone Holtvluwer in memory of Henry Holtvluwer, first chair of the board of The Calvin College Oratorio Society. Interest from this fund provides an annual award of \$720 to an outstanding music major entering the junior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of overall grade point average.

**Music Department Applied Music Scholarship.** Four awards of \$1,500 each are presented by the Calvin College Music Department to prospective first-year students for use toward the cost of individual lessons in applied music, and toward defraying other educational costs. These awards are given to instrumentalists and vocalists who have records of superior achievement in high school music activities, who give evidence of outstanding talent and musicianship in audition, and who will participate in the scheduled rehearsals and performances of a faculty-directed ensemble.

**Lloyd and Arlene Warners Keyboard Scholarship.** One award of \$1,500 is offered annually by these donors to keyboardists who have a record of superior achievement in high school music activities. The award is applied to four semesters of private piano or organ lessons. The recipients will be expected to participate in the scheduled rehearsals and performances of at least one faculty-directed ensemble or fulfill this requirement by accompanying student lessons and performances. Applicants will be judged on the evidence of talent and musicianship.

**The Norman and Anne Noordeloos Keyboard Award.** Contributions have been received by the Music Department in memory of Anne Noordeloos, mother and grandmother of students active in Calvin's music program. Interest from this fund provides annual awards of \$720 to outstanding pianists or organists entering the junior or senior year at Calvin College who have attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance at the keyboard, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used

(except for music education students during student teaching).

**Oratorio Society Applied Music Scholarships.**

Four awards of \$1,500 each are presented by the Calvin College Oratorio Society to prospective first-year students for use toward the cost of individual lessons in applied music. These awards are given to instrumentalists and vocalists who have records of superior achievement in high school music activities, who give evidence of outstanding talent and musicianship in audition, and who will participate in the scheduled rehearsals and performances of a faculty-directed ensemble.

**The Rainbow Foundation Wind Award.** An annual award of \$720 is given by Thomas and Marjorie Hoozeboom through the Rainbow Foundation of Kalamazoo to an outstanding performer on a wind instrument entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged by the following criteria: proficiency in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 3.0 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The John Scripps Wind Award.** An annual award of \$720 is given by John Scripps to an outstanding performer on a wind instrument entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged by the following criteria: proficiency in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The Seymour Swets Voice Award.** Contributions have been received by the Music Department in memory of Seymour Swets, the founder of Calvin's Music Department. Interest from this fund provides an annual award of \$720 to an outstanding voice student entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency

in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

**The John and Doris Van Dellen Music Scholarship.** Contributions have been received by the Music Department from John and Doris Van Dellen, brother and sister, who have long had an interest in vocal music and in Calvin's music program. Interest from this fund provides an annual award of \$1,200 to a student musician entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5). First consideration will be given to students who are outstanding in vocal music. Students are required to take private lessons for credit in the medium for which the scholarship is awarded in the year for which the scholarship is used (except for music education students during student teaching).

**The Vander Haagen Family Scholarship for Church Musicians.** An annual award of \$1,200 is given by David and Jane Vander Haagen of Lansing, Michigan, to an outstanding student who is pursuing or planning to pursue a program in church music, either general, organ or choral. The award is for a current Calvin student entering the junior or senior year. Applicants will be judged by the following criteria: proficiency in performance as a singer or keyboardist, participation in an appropriate faculty-directed ensemble or accompanying, a cumulative grade point average of 2.7, and some demonstrated financial need. Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used.

**Vander Heide Voice Scholarship.** An award of \$1,500 is offered annually by Mrs. Jan Vander Heide to a vocalist who has a record of superior achievement in high school music activities. The award is applied to four semesters of private voice lessons. The recipient will be expected to participate in the scheduled rehearsals and performances of at least one faculty-directed choral ensemble. Only incoming first-

year students are eligible. Applicants will be judged on the basis of evidence of talent and musicianship.

### ***Nursing Department***

**The Kate Borgman Nursing Scholarship Fund.** A fund was established by Mr. and Mrs. Fred Borgman of Grand Rapids, Michigan to establish a scholarship fund in memory of their mother, Mrs. Kate Borgman, who dedicated her life to the nursing profession. The scholarship is derived from the income of the fund. The scholarship recipient should be a nursing student in their junior or senior year having a grade point average of 2.5 or higher and should demonstrate industry, motivation and worthiness to be successful in the Nursing Program and to contribute to society through the nursing profession. A scholarship in the amount of \$1,600 was awarded for 1994-95.

**Thedford P. and Ruth I. Dirkse Scholarship.** The children of Thedford and Ruth Dirkse have established this scholarship to honor their parents' long association with Calvin College. Dr. Dirkse taught Chemistry to students in the Nursing Program and Ruth Imanse Dirkse was Manager of the Bookstore and active in the Alumni Association. Candidates for this scholarship must be entering the junior or senior year, be pursuing a program in Nursing, and have a GPA of 3.3 or higher. A scholarship of \$700 was awarded for 1994-95.

**Bryan Dykstra Nursing Scholarship.** The family and friends of the late Bryan Dykstra from Rochester, New York, have contributed funds to be used for scholarships in Bryan's memory. Bryan was a student at Calvin in 1982-1983 before he contracted leukemia and passed away in the fall of 1983. The scholarship will be awarded to a student who is pursuing nursing as a career, in recognition of all that Christian nurses did for Bryan before his death. One scholarship of \$850 was awarded for 1994-95.

**Kent Medical Foundation Grants.** Each year Calvin College receives funds from the Kent Medical Foundation to be used for scholarships for students in nursing. Recipients of these awards must be residents of Kent County or bordering counties and enrolled or planning to enroll in the Bachelor of Science Nursing Program. Selection is made on the basis of the student's academic record, potential for service as a nurse, and financial need. Two grants of \$950 each were awarded for 1994-95.

**The Victor VerMeulen Nursing Scholarships.** Gifts have been received from Dr. Victor and Mrs. Mildred VerMeulen of Grand Rapids, Michigan, to fund a scholarship in honor of their son, Victor R. VerMeulen, Jr. Each year six or more awards of \$1,500 each will be made to students who are entering the junior or senior year of the nursing program. Selection is based primarily on the student's academic record and potential for Christian service in nursing. Financial need is considered as a secondary factor.

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

### ***Philosophy Department***

**The Bouwsma Memorial Scholarship in Philosophy.** Through the generosity of the late Mrs. Gertrude Bouwsma-Bos and in memory of her husband, the late Professor O.K. Bouwsma, a \$500 scholarship is available each year to a philosophy major who exhibits outstanding achievement and continuing promise in philosophy. Professor Bouwsma was a Distinguished Alumnus of Calvin and an influential American philosopher. The recipient is selected by the Philosophy Department.

### ***Physical Education Department***

**The Dr. Barney Steen Scholarship for Physical Education.** Through the generosity of Gerrit and Agnes Hennink, as well as other friends and former athletes of Barney Steen and the College, this scholarship honors Dr. Barney Steen for his many contributions to the Physical Education Department and Calvin College while serving as department chair, athletic director, professor, and coach. Scholarships are awarded to students entering the senior year at Calvin who are pursuing a major or minor in physical education or recreation. Selection is based on leadership ability, ethical character, academic achievement, ability to articulate a Christian perspective, and service vision. One scholarship of \$900 will be awarded annually.

### ***Political Science Department***

**DeKryger-Monsman Memorial Prize.** As a result of a gift to Calvin College by Mrs. Gerald

Monsman in memory of her husband, one prize is awarded each year to a junior political science major for use in the senior year at Calvin College. The award is given solely on the basis of academic achievement.

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

### ***Psychology, Sociology and Social Work Departments***

**The Sociology and Social Work Department Award for Academic Excellence.** Contributions by friends of the Sociology and Social Work Department have made possible a scholarship to recognize an outstanding student in the junior year majoring in Sociology, Social Work or Criminal Justice. The recipient will be chosen by the departments on the basis of academic record and faculty recommendations. One scholarship of \$850 or more is awarded annually.

**The Vanderploeg-Edgerly Scholarship.** Drs. Gretchen and David Edgerly have established this scholarship to recognize a promising student majoring in Psychology or Sociology or who has been accepted into the Bachelor of Social Work Program. Applicants must be entering the junior or senior year and have a cumulative grade point average of 3.0 or higher. In accepting the award, the recipient will agree to write a major paper on the topic of child sexual abuse. One scholarship of \$850 was awarded for 1994-95.

**The Connie Bratt Social Work Scholarships.** Connie Bratt, one of the first students from Calvin College to pursue a professional career in social work, established this scholarship in hopes of encouraging other students in the Bachelor of Social Work Program. Two scholarships of \$800 or more will be awarded annually to two seniors who have been accepted into the Bachelor of Social Work program and who exhibit a commitment to Christian service.

### ***Religion and Theology Department***

**The Dr. John. H. and Gladys A. Bratt Family Scholarship.** This scholarship has been established by the children of Dr. John H. and Mrs. Gladys A. Bratt in Dr. and Mrs. Bratt's honor to recognize Dr. Bratt's distinguished professorship of 30 years in the Department of Religion and Theology at Calvin College. This scholarship is intended to provide recognition and financial assistance to pre-seminary students who are preparing to enter Calvin Theological Seminary and eventually to become ministers of the Word. Candidates for this scholarship must be entering the junior or senior year at Calvin and have a cumulative grade point average of 3.30 or higher. The amount of this scholarship is \$1,200 and will be awarded annually beginning in 1995.

**The Gordon J. Spykman Memorial Scholarship.** The family of Gordon J. Spykman established this scholarship to honor the life, work and convictions of Prof. Gordon Spykman who died in 1993 after teaching at Calvin College for 32 years. The Gordon J. Spykman Memorial Scholarship encourages students to explore the implications of Jesus Christ's claim on every square inch of creation, on all spheres of life. Recipients must be religion and theology majors or minors who demonstrate an interest in the reformational worldview that Prof. Spykman articulated in his writings and teaching at Calvin College. Candidates for this scholarship must be entering the junior or senior year, have a cumulative grade point average of 3.0 or higher, and have an interest in a reformational worldview. The amount of the scholarship is \$1,200 and is awarded annually.

**The John S. Vander Heide III Memorial Scholarship.** Mr. and Mrs. John S. Vander Heide, Jr. have established a scholarship in loving memory of their son, John III, who passed away in 1989 at the age of 28. Because John III was greatly influenced by his pastors, Mr. and Mrs. Vander Heide wish to offer a scholarship through the Religion and Theology Department to pre-seminary students who show promise of theological and pastoral leadership in the ministry of the Christian Reformed Church. The amount of the scholarship is \$1,200 dollars for 1994-95.

## Science Division

**The John and Lillian Van Oosten Scholarship.** As a result of a bequest to Calvin College by the late Dr. and Mrs. Van Oosten, six scholarships of \$1,600 each are available to students pursuing studies in the natural sciences. Scholarships are awarded to juniors and seniors primarily on the basis of the student's academic record and financial need. Candidates for this scholarship must have a minimum grade point average of 3.0 or higher.

**The Steven M. Zifferblatt Memorial Scholarship.** Mrs. Patricia M. Zifferblatt of Grand Rapids, Michigan has provided the

College with funds to award scholarships in memory of her late husband, Steven. Because of Mr. Zifferblatt's spiritual experiences during the last five years of his life when he was in special need of health care, scholarships will be awarded to students who are pursuing a program in one of the health care professions such as medicine, dentistry, nursing, physical therapy, etc. Applicants will be required to write a paper on some aspect of health and of ethical issues related to health care. Applicants must be entering the senior year and have a cumulative grade point average of 3.0 or higher. Fifth year seniors are also eligible to apply. One scholarship of \$3,000 was awarded for 1994-95.

## Scholarships for Graduate Students

Graduate students enrolled in the Master of Education Program, in one of the Post-Baccalaureate Non-Degree Teacher Education Programs, or pursuing a second undergraduate degree are eligible for scholarships in amounts of \$2,400, \$1,600, and \$850. Students pursuing a Provisional Teacher Certificate or a second undergraduate degree are considered for the \$850 scholarships; others are considered for all the scholarships and are awarded the best scholarship for which they are eligible.

Students are considered for the scholarships automatically at the time of admission to the program; no separate scholarship application is required. An undergraduate grade point average of 3.5 or better is required for consideration. Applications for admission must be received 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.

First-year applications for financial aid should be filed by February 15 (April 1 for Canadians) and upperclass 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 \$1,975 to Michigan residents attending eligible institutions in the state. Com-

petitive 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.

**Federal Pell Grants.** The Pell Grant Program, funded by the federal government for U.S. citizens and permanent residents of the U.S., is designed to provide grant assistance of up to \$2,300 per year to students whose parents' income is approximately \$40,000 or less. Since there are factors other than income considered in the evaluation, some with incomes above \$40,000 may qualify for the program, and others with lower incomes may not qualify. Only students in undergraduate programs are eligible.

**Federal Supplemental Educational Opportunity Grant.** This program, funded by the federal government, provides funds to the college for needy students. These grants are awarded to students who qualify for need-based aid but are not eligible for or do not receive enough grant assistance in the Pell and State Grant programs. Recipients must be U.S. citizens or permanent residents of the U.S. and must be enrolled in an undergraduate program. The maximum grant is \$4,000 per year.

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

**Knollcrest Scholarships and Calvin Grants.** The College has established a program of scholarship and 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. Awards range from \$200 to as high as \$8,000 depending on need and other financial aid received. The program is open to graduate as well as undergraduate students. The program provides a minimum award of \$1,000 to first-year students who demonstrate need, have a high school grade point average of 3.0 or higher, or an ACT Composite score of 22 or higher, or combined SAT

scores of 900 or higher, and are not receiving the equivalent of an Honors or better scholarship from the College. These minimum awards are renewable for one year if the student earns a cumulative grade point average of 2.6 or higher at Calvin.

**Calvin Opportunity Grants.** Because of a concern about the amount of money some students borrow to pay college expenses, Calvin has established a program of grants for students with exceptional financial need. The grants are awarded to students whose parents are not able to help them financially and who have not had the educational, social, and cultural opportunities that most other students have had. Since one of the concerns of these students is their lack of financial resources and the amount of money they expect to borrow to pay college expenses, Opportunity Grants are provided to keep loans for these students at a reasonable level. The objective of the program for 1994-95 is that the total amount of loan and part-time work combined during the school year for a student who qualifies for this grant should not exceed \$3,200 to \$3,500. This means that in most cases loans for these students will be approximately \$2,200. Without an Opportunity Grant, loans for these students would be \$3,000 or more per year. It is expected that grants will be awarded to about 20 or 25 students for 1994-95.

**Exchange Grant for Canadian Students.** An exchange adjustment program has been established by the college to offset in part the additional costs encountered by Canadian students resulting from the exchange on Canadian funds. This adjustment applies to tuition and room and board charges and is determined in one of two ways. 1) For students who qualify for need-based aid from Calvin, an adjustment is made to offset approximately one-half the additional cost resulting from the exchange. Part of this adjustment is reflected in a larger Calvin Grant than would otherwise be awarded, and part is reflected in the Exchange Grant. 2) For others, an adjustment is made so that the amount received is the same as the average received by those in the first category. For 1994-95, the Exchange Grant is \$1,050 for all students.

**Michigan Adult Part-Time Grant Program.** This program provides a limited amount of grant assistance to needy adult Michigan students who are enrolled in an undergraduate

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

**Grants for Off-Campus Programs.** The college provides need-based grants to students enrolled in off-campus courses when there is additional cost involved. This includes off-campus interim courses as well as programs for the semester or academic year where the cost is higher than for a student on-campus. The amount of the grant depends on the amount of the additional cost involved and on the student's need. The maximum grant is determined annually and was \$500 in 1993-94.

**Federal 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.

**Federal Perkins Loans.** This program, formerly called the National Direct Student Loan, sponsored by the federal government for U.S. citizens and permanent residents, provides long-term loans to students with financial need. There is no interest charge on the loan, and repayment can be deferred as long as the borrower is enrolled in college at least half time. Repayment begins six to nine months after the borrower ceases to be at least a half-time student, and the interest rate during repayment is 5 percent simple interest. The minimum repayment is \$120 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.

**Federal Stafford 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 \$5,500 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 or from Calvin's Financial Aid Office.

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

## OTHER STUDENT AWARDS

**Anna Bruinsma Award in Music.** The interest on \$750, given by the late H. J. Bruinsma of Grand Rapids in honor of his deceased wife, one of Calvin's alumnae, is to be used in the Department of Music, two-thirds of it serving as first, and the remaining third, as second prize. These awards to seniors are granted for the student's contribution to musical life on campus and academic achievement.

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

**The Boonstra Memorial Award.** Each year the Department of Mathematics and Computer Science makes an award in memory of Professor Paul Boonstra who taught mathematics education at Calvin College from 1965 through 1987. The prize is awarded to a graduating senior specializing in mathematics education at the secondary level. The recipient is selected on the basis of performance in mathematics

courses and in directed teaching. The award represents the income from a fund established by students and colleagues of Professor Boonstra.

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

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

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

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

**Harmon D. Hook Memorial Award in English.** An award of \$200 is offered each spring to an

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

**The Beets Calvinism Award.** The late Dr. and Mrs. Henry Beets established a fund, the income from which is used to award a \$150 first prize and a \$75 second prize for the best research papers on annually specified themes in Calvinism studies, written by Calvin College students. The prize or prizes are awarded at the discretion of the Department of Religion and Theology.

**The William B. Eerdmans Literary Award.** The late Mr. William B. Eerdmans, Sr., established the William B. Eerdmans Literary Award in the interest of encouraging original, critical, and creative writing among Calvin College students. The \$200 award is administered annually by the English Department.

**O.K. Bouwsma Memorial Award in Philosophy.** Through the generosity of the widow of Professor O.K. Bouwsma and other benefactors, an annual prize of \$200 will be awarded to one upperclass student for distinguished achievement in philosophy and promise of future contribution to Christian scholarship. The Philosophy Department selects the recipient on the basis of submitted papers.

**The Rinck Memorial Prize.** 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; sec-

ond prize is \$75. The contest is open to all college students and is administered by the Department of Religion and Theology.

**Vander Ark Distinguished Teacher Education Student Award.** The Vander Ark family, known for the number of family members who have served as teachers and administrators, sponsors annually an award by the Education Department to outstanding student teachers who are nominated by their instructors for superior performance in student teaching and course work. The awards will be announced by May 1 of each year.

**Henry Zylstra Memorial Award.** In honor of the memory of Professor Henry Zylstra, an award of \$200 is offered each fall to one or more senior English majors at Calvin who plan to continue studies in literature on the graduate level upon graduating from Calvin College. The award is intended primarily to help defray expenses incurred in applying to graduate schools. Application should be made to the chair of the English Department by September 30 of the applicant's senior year. The recipient or recipients will be selected by the English Department on the basis of demonstrated academic ability, commitment to and promise of success in graduate work, and a concern for Christian liberal education.

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

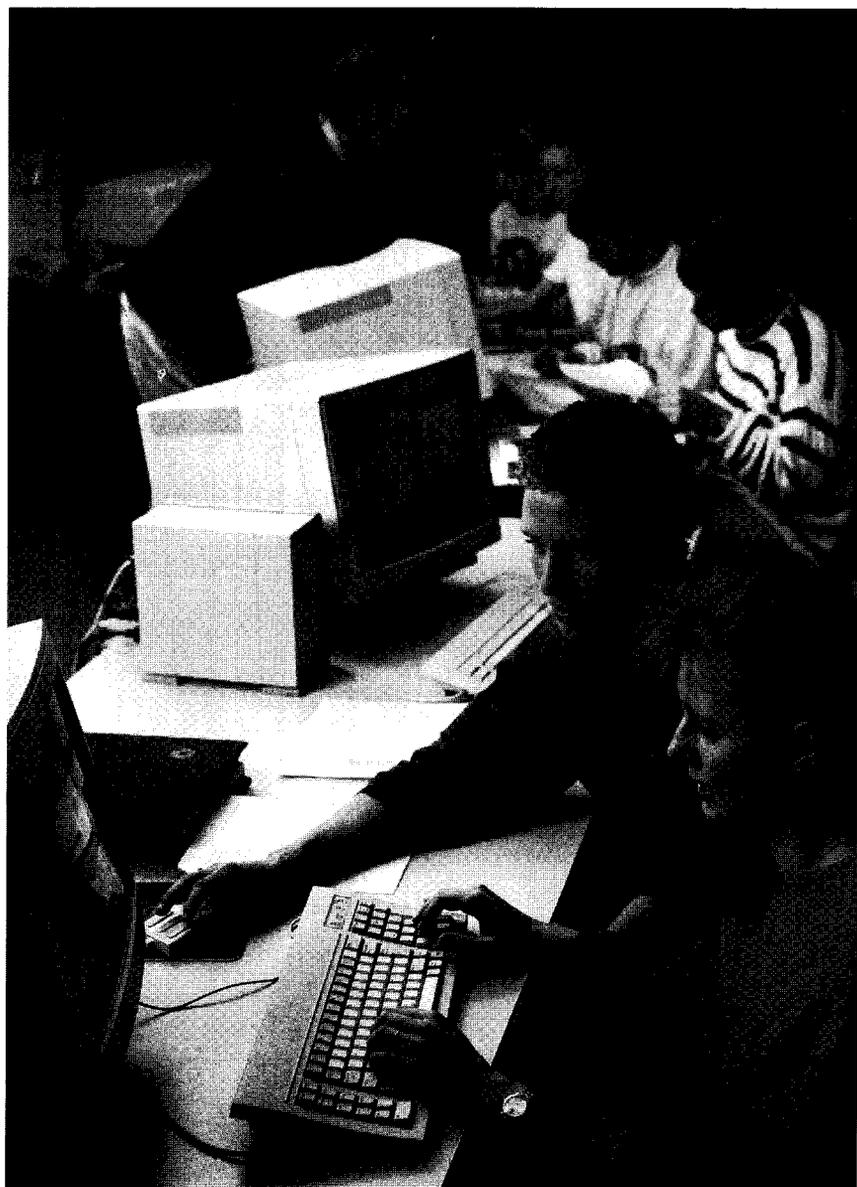
**Calvin Alumni Chapter Scholarships.** Several Alumni Association chapters offer scholarships, which are administered locally, to incoming Calvin first-year students. Candidates should consult the Alumni Relations Office or

a member of the local Alumni Association chapter for information.

**Bernard J. TenBroek "Excellence in Biology in Secondary Education" Award.** At the time of his retirement from teaching, the Biology Department established the TenBroek Award fund. This award is given to a student completing the senior year of study who has declared a major in biology and has fulfilled the requirements for certification in secondary education. The student must have completed at least three years of study at Calvin College to be eligible for this award.

**Bernard J. TenBroek "Excellence in Biology in Research" Award.** At the time of his retirement from teaching, the Biology Department established the TenBroek Award fund. This award is given to a student completing the senior year of study who has declared a major in biology and has completed at least three of these years at Calvin College. The recipient must have demonstrated ability to do investigative work in the biological sciences and be completing application for graduate studies.

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



# UNDERGRADUATE PROGRAMS

## **Christian liberal arts education.**

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

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

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

The Christian liberal arts philosophy permeates all of the degree programs of the college. Traditionally, most students complete the Bachelor of Arts or the Bachelor of Science degree programs, either of which may include a teacher certification component. Other degrees offered by the college include the Bachelor of Fine Arts in art, the Bachelor of Science in Recreation, the Bachelor of Science in Nursing, the Bachelor of Science in Accountancy, the Bachelor of Science in Engineering, the Bachelor of Social Work, and the Master of Education. Cooperative bachelor of science degrees are offered with a number of other institutions in communication disorders, medical technology, occupational therapy, and special education.

## **Bachelor of Arts, Bachelor of Science Degrees**

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

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

ation requirements except when such courses are a designated part of a required major or minor program. No more than two course units of internship credit may be applied to graduation requirements, except when such courses are a designated part of a professional program.

Students who have completed at least fifteen courses in biology, chemistry, computer science, the earth sciences, engineering, mathematics, and physics may elect instead to receive a Bachelor of Science degree.

Students desiring to earn a second baccalaureate degree from Calvin College must meet all of the requirements of the second degree and complete a minimum of 42 course units.

## I. THE LIBERAL ARTS CORE

The liberal arts core is planned to provide a broad and significant educational foundation in a Christian setting. Strong high school preparation reduces the number of required courses in the core, and the number may be further reduced by examinations in any subject.

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

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

One course in history from 101 and 102.

One course in philosophy, 153.

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

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

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

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

One course in mathematics from 100, 132, 143, 155, 160, and 161; 221 and 222 are required of students in the elementary education programs.

One course in physical science from Astronomy 110, Astronomy 201, Chemistry 101, Chemistry 103, Chemistry 104, Chemistry 105, Geology 103, Geology 151, Physics 110, Physics 111, Physics 123–124, Physics 126, Physics 221, and Physics 223; students in the elementary education program must take Chemistry 101, Physics 111 or Physics 212 in addition to Interdisciplinary 213.

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

The two requirements in the biological and physical sciences may also be met by a two-semester sequence in Biology 131–233 or 131–232; Chemistry 103–104, 113–114, or Chem-

istry 105–201; Geology 151–152; Physics 123–124 when accompanied by 181–182, 126–225, or 221–222.

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

Students, except for those in the elementary education programs, who have completed, with minimum grades of C, four years of college preparatory mathematics in high school are excused from the mathematics requirement; those who have completed with minimum grades of C three years of natural science in grades 10 through 12 can fulfill the science requirement by taking one core course in any natural science. Every student must take at least one college core course in natural science; advanced placement credit earned prior to the high school diploma may not be used to meet both science core requirements.

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

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

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

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

One course in literature taught in English (that is, excluding non-literature courses, e.g., cinema) from courses numbered 200 through 319.

One course in the other fine arts or in literature taught in a foreign language. These may be from Art 151, 201, 202, 231, 232, 233, 234, 235, 236, 237, 238, 240, 241, 243, 245, Classics 221, 231, Music 103, 105, 234, 236, 238, 241, 242, Communication Arts and Sciences 140, 203, 217, 254, 320, 321, 325, or foreign literature courses. Art 215 and Music 238 are acceptable only in elementary teacher education programs; Art 215 is required in special education programs.

A third course from either of these groups or English 325 or 326. Students who have completed, with minimum grades of C, four years of high school English (excluding speech) or those who have completed in grades 11 and 12 either three semesters of literature (excluding composition, creative writing, journalism, film, and mythology) or one year of art history or music appreciation are excused from this third requirement. Every student must take at least one college core course in literature; advanced placement credit earned prior to the high school diploma may not be used for more than one course in this core category.

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

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

One course in written rhetoric, English 100, completed with a minimum grade of C.

Two courses designated "Writing Enriched," one offered in any department, and one in the major program. See the Academic Writing Program on page 64 for further explanation.

One course in oral rhetoric from Communication Arts and Sciences 100, 101, 200, or 214. Communication Arts and Sciences 240 is acceptable only in the Social Work and Recreation programs. CAS Majors must take either 101, 200 or 214 to meet this requirement.

One course unit (four quarter courses) in basic physical education, comprised of Physical Education 104 followed by three additional courses from 110 through 199; 221 may substitute for one of the additional courses for students in teacher education and physical education. Not more than one course unit of basic physical education may be applied to graduation requirements.

## **6. Competency is required in one foreign language**

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

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

A student usually should complete the core requirements in mathematics, history, and written rhetoric by the end of the first year and should complete the requirements in physical science, biological science, social sciences, spoken rhetoric, and foreign language by the end of the sophomore year. At least one course in religion and theology should be taken in each of the student's first two years at Calvin.

Students in elementary education programs, whose choice of core courses is very limited, should confer with a program advisor in selecting core courses. The advisors are listed on page 68.

Certain professional-degree programs have a modified core curriculum approved by the faculty. These include accountancy (B.S.A.), engineering (B.S.E.), fine arts (B.F.A.), nursing (B.S.N.), recreation (B.S.R.), and social work (B.S.W.), whose model programs are described on pages 79-89.

## **II. INTERIM COURSES**

A student must normally complete a minimum of three interim courses for graduation. (Transfer students must complete one interim course for each year in residence.) Interim courses are graded honors (H), satisfactory (S), or unsatisfactory (U), except those courses that satisfy core requirements, which are graded in the conventional A-F system. See page 25 for an explanation of these grading systems. Students may not take more than two interim courses in a single department.

Calvin College is associated with a number of similar colleges with January interim programs, making possible the exchange of students during the interim. Information is available from the Director of Off-Campus Programs.

## **III. PROGRAMS OF CONCENTRATION (MAJORS AND MINORS)**

**Majors.** Every degree-seeking student must fulfill the requirements of a faculty-approved departmental or group major. Although such major concentrations are not normally chosen until the second semester of the sophomore year, most programs do presuppose the completion of specific freshman and sophomore courses. Official admission to a major program requires the formal approval of a department or program advisor and the completion of a counseling form which details the student's remaining academic requirements. Whenever students change their major, they must again sub-

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

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

The various programs of concentration are specified in the section of the catalog which describes departmental programs and course offerings, beginning on page 101. Group majors designed for teacher certification programs are described in the section on Teacher Education Programs, on page 66 and following.

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

**Minors.** Optional six-course departmental minors and group minors are possible in certain fields. A C (2.0) average in the minor program courses is required for graduation in them. Most of the minors are described in the departmental sections of the catalog. The group minor in environmental studies is included under the Department of Geology, Geography, and Environmental Studies; that in journalism, under the Department of English; that in German studies, under the Department of German; and that in missions, under the Department of Religion and Theology; the interdisciplinary minor in Third World Development Studies is described on page 229. Only those minors described in the Teacher Education Programs section are approved for teacher certification. Group minors require the written approval of the designated advisor.

**Overlap between major and minor (or supplementary) concentrations.** A student's major concentration and minor (or supplementary) concentration shall consist of at least fourteen distinct courses; moreover, when some courses may apply toward both concentrations, no more than two courses shall be counted as satisfying the requirements of both the major and minor (or supplementary) concentrations. This policy has the following implications:

Courses required in the major	Maximum overlap permitted	Minimum # of distinct courses required
8	0	14
9	1	14
10	2	14
11 or more	2	15 or more

*Overlap between two majors.* A double major, i.e., two college recognized major concentrations, shall consist of a minimum of sixteen distinct courses. When some courses may apply toward both concentrations, no more than three courses shall be counted as satisfying the requirements of both major concentrations. This policy has the following implications:

Total courses in two majors	Maximum overlap permitted	Minimum # of distinct courses required
16	0	16
17	1	16
18	2	16
19	3	16
20 or more	3	17 or more

## Special academic programs

### Academic Writing Program

*Minimum Grade in English 100.* As the first step in developing competence in writing, a minimum grade of C is required of all students receiving credit for English 100. Students who receive a grade of C- in English 100 may enroll in English 235 ("Practice in Composition") or retake English 100, and those who receive D+ or below will normally retake English 100. A grade of C or above in a composition course is thus required for graduation, effective for those students entering the college in 1991-92 or after. Students will normally be expected to complete this requirement before enrolling in a "W" course (see below).

*Writing Enriched Courses.* First-year students entering the college during the 1992-93 school year or later will be required to complete two "Writing Enriched" ("W") courses to fulfill the written rhetoric requirement of the core curriculum. The first may be a "W" course offered in any department; the second should be either in the student's major or approved by the student's major advisor. Such courses require substantial writing, and the processes of writing and revising papers for these courses are carefully integrated with the processes of learning the course subject matter. Written work will count for at least twenty-five percent of the final grade in "W" courses, and enrollment will be limited to twenty-five students.

*Writing Program.* Beginning in the fall of 1994 some academic departments will be establishing departmental writing programs. Students majoring in these departments will meet the "W"-course requirement by way of their departmental course work. Students planning majors in Engineering, Economics and Business, or Religion and Theology should consult their advisor on the status of those programs.

## **The Honors Program**

Calvin College offers special opportunities for students of outstanding academic ability throughout their undergraduate education. The Honors Program is intended to provide for the discovery, nurturing, and rewarding of academic excellence, and to prepare the outstanding student for leadership in service to the immediate community and the world at large.

Students are automatically invited to participate in the Honors Program if they have been awarded National Merit, Presidential, Dean's, Faculty Honors, or Mosaic scholarships. Other students whose cumulative GPA is 3.3 or higher are also eligible to apply to the Director with two letters of reference, a personal statement of interest, a current transcript, and ACT test scores.

Students in the Honors Program may register for special honors sections of large courses, arrange with a professor to take a regular course for honors credit (for which extra work is required), seek exemptions from core requirements by examination, propose cross-disciplinary programs of concentration, and participate in various extracurricular events for honors students. Honors classes generally assume a high level of motivation and initiative on the part of the student, and aim at greater depth of learning than a regular class.

To graduate with honors, students must complete six honors courses, including at least two in their major department, with a cumulative GPA of 3.3 or higher. Regular interim courses with honors grades are not considered honors courses. Students must apply for admission to the departmental honors program in their major after completing at least two honors courses in the general curriculum and earning a cumulative GPA of 3.3 or higher. They must also notify the Registrar's Office of their intent to earn an honors degree prior to their final semester of study.

For further information, contact the Director of the Honors Program, Prof. Ken Bratt (Classics Department).

Full-time students, including graduate students, with an average grade of A- (3.5) or higher for the semester of compilation and a cumulative grade of 3.3 or higher will be placed on the Dean's List. Part-time students who meet the grade point requirements above and have earned 1 c.u. within the last year and at least 4 c.u. within the last 2 years will be placed on the Dean's List. The Dean's List is compiled at the end of each semester when grade reports are printed. Interim grades and subsequent grade changes normally do not alter the list.

## **The Access Program**

The Access Program is an alternative entry into Calvin College for those students who do not meet admission standards but whose records indicate that they could develop into successful college students. Admission into this program is determined by the Committee on Admissions and is based on high school grades, high school coursework, ACT/SAT scores, and recommendations. Enrollment by means of this program is limited each year to a specific number of first-year students.

Once a student has been selected to be part of the Access Program, placement tests in English and mathematics are given to determine whether review coursework is necessary in either or both areas. All Access students are required to take ASC 006: Methods and Motivation for College Study. This course, a half-unit, non-credit course,

is taken concurrently with a reading-lecture course by which the student learns to apply what is taught in ASC 006.

Students in the Access Program are assigned to special academic advisors who are familiar with the program requirements and the methods by which academic progress can be attained. Typically, Access students are very involved in the program during their first semester, and additional follow-up occurs during the second semester.

### **Adult Education: The Liberal Arts Core in an Evening Schedule**

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

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

#### *Fall 1994*

English 100

History 102

Religion 103

Spanish 101

#### *Fall 1995*

Spanish 201

Mathematics 100

Philosophy 153

#### *Fall 1996*

Sociology 151 or Psychology 151

Biology 111

Communications

#### *Spring 1995*

Political Science 151 or Economics 151

Astronomy 110

Physical Education 104

Spanish 102

#### *Spring 1996*

Spanish 202

English 200

Art 151

#### *Spring 1997*

A second history course

Religion 201

Philosophy 171

### **Off-Campus Study Programs**

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

Interim off-campus courses are named under departmental offerings and described in a separate Interim Catalog. Applications are available at the beginning of the fall semester from the Interim course instructors.

For information about semester- and year-long programs, see pages 189–195.

### **Programs for teacher education**

#### **Undergraduate Teacher Education Programs**

Students wishing to become teachers must make formal application and be admitted to the teacher education program. Specified standards must be maintained to remain in the program and be recommended for certification. Because of the complexity of the various requirements to be met, and depending on the program followed in high

school, it is likely that the program will take more than four years (36 courses) to complete.

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

To be admitted to directed teaching, students must receive the positive recommendations of the instructors of Education 301, 303, and 322 (elementary), and if in special education, also 216. Students must have a cumulative grade point average of 2.5; must have completed at least 25 course units, including at least 6 in the departmental or group major or minor concentrations; and must have the approval of each major and minor department and of the Education Department. The college must have proof of passing scores on the Michigan Basic Skills Test before students will be allowed to take directed teaching.

In many cases, departmental approval involves passing a proficiency test in the discipline as well as demonstrating personal qualities important to effective teaching. Students should carefully read the departmental sections of this catalog and the *Teacher Education Program Guidebook* for specific information concerning the specific requirements of the departments of their majors and minors.

The State of Michigan will require the passing of a competency test in each area of certification and in the basic skills as a condition for certification. Students in the elementary and Special Education (MI) programs must also pass an elementary test. A registration booklet is available in the Education Department.

Students normally should apply for their directed teaching assignment by March 1 prior to the academic year in which they expect to student teach, but no applications will be accepted later than fifteen weeks before the start of the semester in which the student intends to enroll in directed teaching. In addition, students must have completed certain required education courses. All of the above qualifications are specified in the *Teacher Education Program Guidebook*, available from the Education Department.

To be recommended to the State of Michigan for teacher certification, a student must have maintained the standards above, must have completed the degree requirements as listed on the counseling sheet, must have completed directed teaching with a minimum grade of 2.0, must be recommended by his or her college supervisor, must have a cumulative grade point average of 2.5 and passing scores on all State of Michi-

gan tests. Students are also required to pay a certification fee directly to the State of Michigan before receiving their certificates.

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

Students either not admitted or dropped from the program have the right to appeal in writing and in person to a committee normally consisting of the chair of the Teacher Education Committee, a member of the Teacher Education Committee, and the chair of the Education Department Screening and Certification Committee. Information concerning the appeals process is available in 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 Academic Credit to be equivalent to their Grade 12 works, advanced credit given for Ontario Academic Credits is discounted by the ministries of education in the other provinces when evaluating teaching credentials.

Students from Ontario wishing to meet its requirements must complete five years beyond Grade 12 (150 semester hours). One year of that preparation (30 semester hours) must be in professional education courses, including practice teaching. In addition, students intending to teach in another province must also earn the teacher credentials of that province.

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 for two years in a Christian Schools International member school. For current information or any further clarification, consult Ms. Jo Stuiwe, director of teacher certification.

Graduates who have earned a Michigan Provisional Certificate since July 1970, must complete a 5.2 course unit (18 semester hours) planned program or enroll in a master's degree program to qualify for a Continuing Certificate. The Master of Education program at Calvin can be used not only to satisfy the requirements for continuing certification but also to develop additional areas for certification. Graduates seeking such certification should consult the director of teacher certification.

The departmental advisors for education programs are as follows:

ART, Ms. Helen Bonzelaar, Ms. Anna Greidanus-Probes, Department of Art

BILINGUAL EDUCATION, Ms. Edna Greenway, Department of Spanish

BIOLOGY, Mr. Steven Stegink, Department of Biology

CHEMISTRY, Mr. Ken Piers, Department of Chemistry

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

COMPUTER SCIENCE, Mr. Gary Talsma, Department of Mathematics

ECONOMICS, Ms. Shirley Roels, Department of Economics

ENGLISH, Secondary: Mr. Kenneth Kuiper, Mr. William Vande Kopple, Mr. James Vanden Bosch; Elementary: Mr. Henry Baron (on leave second semester), Mr. Don Hettinga, Mr. Gary Schmidt, Ms. Mary Ann Walters, Department of English

FINE ARTS, Ms. Helen Bonzelaar, Department of Art, Mr. Randall Bytwerk and Mr. David

Holquist, Department of Communication Arts and Sciences, Ms. Trudi Huizenga, Department of Music

FRENCH, Mr. James Wilkins, Department of French

GERMAN, Ms. Barbara Carvill, Department of Germanic Languages

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

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

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

HISTORY, Mr. Robert Bolt, Mr. Daniel Miller, Department of History

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

MATHEMATICS, Ms. Jan Koop, Mr. Gary Talsma, Department of Mathematics

MUSIC, Mr. Dale Topp, Department of Music

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

PHYSICS, Mr. John Van Zytveld, Department of Physics

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

PSYCHOLOGY, Mr. Martin Bolt, Department of Psychology

RELIGION, ACADEMIC STUDY OF, Mr. Arie Griffioen, Department of Religion and Theology

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

SOCIOLOGY, Mr. Gordon De Blaeij, Department of Sociology

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

**Elementary education.** Students interested in elementary education must secure copies of the *Teacher Education Program Guidebook* from the Department of Education. Programs should be worked out with the appropriate departmental advisor (see list above for the appropriate advisor) and have the approval of Mr. LeRoy Stegink, director of teacher education. The minimum elementary education program requires the completion of the general education requirements (see pages 60–62 for the courses recommended for studies in teacher education), and the completion of one of the following options for a concentration.

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

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

1. English 325 or 326
2. Geography 101 or 110
3. Psychology 201, 204, 207, or Education 216\*

\*A course on exceptional children is required for certification in at least 27 states, including Illinois. Because of this, students are strongly urged to take Education 216.

Further, all prospective elementary teachers are required to take two courses in mathematics and the teaching of mathematics (Math 221–222) and three courses in science. Each student must take a Biology core course, Physics 111 or 212, and a third course to be chosen from Chemistry, Geology, or Physics. In addition, all students must take IDIS 213.

Students who have earned a natural science exemption and who have completed two years of biology in grades 10–12 are exempted from the biology core course requirement. Other students who have earned a natural science exemption are exempt from the third course requirement. Every elementary education student must complete either Physics 111 or 212. Transfer students may use only laboratory oriented science content courses designed specifically for elementary education as substitutes for Physics 111 or 212.

To meet the core physical education requirement in the elementary and special education (MI) programs, students must take PE 221, 222, and two quarter course activities courses.

Students must complete the required education courses.

A nine-course departmental concentration may be selected from the following subjects: communication arts and sciences, English, foreign language (French, German, Latin, Spanish), history, mathematics, physical education, and political science; an eleven-course departmental concentration may be selected from art and music.

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

**Language Arts Studies Group Major.** English 200 and Communication Arts and Sciences 214 are required. Students majoring in this group must also complete one of the following five-course departmental programs: English 200, 212, or 220; 325 or 326; 335; and two others; or CAS 203, 214, 215, and two others. In addition students must complete the three designated courses from the second department in this group: CAS 203, 214, and 215 or English 200, 212, or 220; 325 or 326; and 335. The remainder of the eleven courses and the electives must be chosen from departments in this group with the approval of the language arts advisor.

**Social Studies Group Major.** Students must take the specified courses from each of the following four disciplines: Economics 221 and 222 or Economics 151 and one course from 323–339; Geography 101 or 110 and one course from 100, 201, 210, and 310; History 101 or 102 and 211; and Political Science 201 and 202. In addition, students must complete the courses listed in one of the following sequences: three courses chosen from Economics 323 through 339; three courses chosen from Geography 100, 201, 210, 220, 310, 311, and an approved elective; three courses from History chosen in the following manner - one course from 355 through 357, one course from 301 through 303 for those who took 102 or one course from 303 through 305 for those who took 101, and one course from 203 through

208 and 231 through 236; three courses chosen from Political Science 203, 207, and an approved elective.

**General Science Studies Group Major.** The six required courses for any concentration in this group are: Biology 111, 114, 115, 116, or 131 (recommended); Chemistry 110, 113, 103, or 105; Environmental Studies 201 or 202; Geology 100, 103, or 151; Physics 111, 212, or 123 and 124; and Interdisciplinary 213. In addition a student must complete one five-course and one three-course sequence listed below. The recommended five-course sequence in biology is 111 or 131 (preferred); 114 or 233; 115 or 232; 116 or 311S; and one elective. In chemistry, 103–104 and three electives or 105 and four electives. In earth science, Geology 100; Astronomy 110 or 201; Environmental Studies 202; and two electives. In environmental studies, 201, 202, and 395; Geology 100; and one course from Biology 116, Geology 103, Chemistry 103, 105, 110, and 113. In geology, 103 or 151; 152; 212; and two approved electives. In health science, Biology 131, 205, 206, 207, plus an approved interim course in health or nutrition. In Physics, 123, 124, 181, 183, 225, 226, and one elective. In the physical sciences, Astronomy 110 or 201; Chemistry 103, 105, 110, or 113; Geology 100, 103, or 151; Physics 111 or 212; 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 112–114 and one elective or 105 and two electives. In environmental studies, 201, 202, and Biology 116 or Geology 100. In geology, 103 or 151; 152; and 212 or 311. In health science, Biology 131, 205 and 206; or 131 or 111, 115, plus an approved interim course in health or nutrition. In physics, 123, 124, 181, 182, and one elective; or 221, 222, and one elective, or 111, 212, and one elective. Specific courses should always be selected in consultation with the Science Division Elementary Education Advisor.

**Fine Arts Studies Major.** Required are Art 215, Communication Arts and Sciences 214, and Music 238. Students majoring in this group must complete a five-course departmental sequence from one of the three following disciplines: Art 205, 209, 215, 231, and 232; Music 105, 205, 234, 238, and two semesters of 110, 120, 130, 140, 150, 160, 170, 131, 141, 161, or 171; CAS 203, 214, 217, and two additional courses from 218, 316, 320 or 321, or an approved interim course. In addition, a student must complete one of the following three-course sequences chosen from one of the three following disciplines: Art 205, 215, 231 or 232; Music 105, 205, or 234, and 238, CAS 203, 214, and 217. The remainder of the ten and a half courses and the electives must be chosen from other departments in this group with the approval of the fine arts advisor.

**Language Arts Studies Group Minor.** The seven required courses for this minor are: English 200, 212, 220, or 240; English 325 or 326; Communications Arts and Sciences 203 or 215; Communication Arts and Sciences 214; one course from the following: Communication Arts and Sciences 140, 215, 230, 254, or one other English course approved by the advisor; and an approved interim in the area of language arts.

**Social Studies Group Minor.** Students must take the specified courses from each of the following four disciplines: Economics 221 and 222 or Economics 151 and one course from 323–339; Geography 101 or 110 and one course from 100, 201, 210, and 310; History 101 or 102 and 211; and Political Science 201 and 202.

**General Science Studies Group Minor.** The seven required courses for this minor are: Biology 111 (not recommended), 114, 115, 116, or 131 (preferred); Chemistry 103, 105, 110, or 113; Environmental Studies 201 or 202; Geology 100, 103, 151; Physics 111, 212, or Physics 123 and 124; and two additional courses from: Astronomy 110, 201, Biology 111 or 131, 114 or 233, 115 or 232, 116 or 311S, 207, Chemistry 103, 103–104, 105, 113, 113–114; Environmental Studies 201, 202, Geology 100, 103, or 151; 152; 212; Physics 111, 212, 123–124 and 181–182, 221–222, and an approved interim in the area of science stud-

ies. Specific courses should always be selected in consultation with the Science Division Elementary Education Advisor.

**Fine Arts Studies Group Minor.** The seven required courses for this minor are: Art 215; Communication Arts and Sciences 214; Music 238; a three-course sequence from one of the following: Art 205, 215, 231 or 232, and an approved Communication Arts and Sciences interim course; Music 105, 205 or 234, and 238; a two-course sequence from one of the following: Art 215 plus an approved art course; CAS 214 plus an approved CAS course; Music 238 or 339 plus an approved music course; and one approved elective or interim course in CAS or music.

**Early Childhood Minor.** The six required courses for this minor are: Education 336; 339; 337; Psychology 304; Education 311, English 329 or 335; and Sociology 304. Education 344 is also required for those students desiring a Michigan Early Childhood Education endorsement on their teaching certificates. This minor must take the place of the six-course planned minor, and may only be used in the three-minor concentration.

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

The appropriate education courses for students in elementary education are Mathematics 221, 222, IDIS 213, Physical Education 221 and 222; Education 301, 303, 304, 305, 309, 322, 324, 325, and 345. The six-course planned program required for Michigan certification typically is met automatically by students meeting the general graduation requirements. Courses recommended for this dual function include: Art 215, Biology 111, 115, 116, or 114, English 100 and any literature course in English or in a foreign language; Geography 101 or 110, Geology 100 or 103, History 101 or 102 and any other history course, Mathematics 100, 221, 131, or 161, Music 238 or 339, Physics 111 or Physics 212, and Interdisciplinary 213, Psychology 204, Political Science 151, 201, or 210, and Communication Arts and Sciences 214. A minor in the academic study of religions is also possible. The advisor is Mr. Arie Griffioen of the Department of Religion and Theology.

**Secondary education.** The minimum secondary program requires the completion of the general graduation requirements (see pages 60–62 for the courses recommended for students in teacher education); a departmental concentration of at least eight and a half courses or a group concentration of at least ten and a half courses; a minor of six courses in another department or a group minor of seven; and eight professional education courses. Students interested in secondary education should obtain copies of the *Teacher Education Program Guidebook* from the Department of Education. Programs should be worked out with the appropriate departmental advisor (listed on page 68–69) and have the approval of Mr. LeRoy Stegink, director of teacher education.

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

economics, geography, political science or social sciences are encouraged to major in history and minor in one of these areas.

Students in the secondary program who major in art, foreign languages (French, German, Spanish), music, or physical education are eligible for a K-12 endorsement on their secondary certificates which allows them to teach their major in grades K-12. Students should check the appropriate departmental sections of this catalog for more information.

Major group concentrations are available only in the sciences and must be planned with care to meet the standards of the North Central Association, the State of Michigan, and the National Science Teachers Association. The secondary group science major includes five courses in one of the natural sciences, three approved courses in another, plus four cognates selected from departments not included in the two departments represented in the major. The group major plus the cognates must total 12 courses. The cognates must also include Mathematics 161 and one from Physics 196, Chemistry 396, Environmental Studies 201 or 202. The science group major and minor is chosen in consultation with the science education advisor. The social science group minor consists of the specified course from each of the following four disciplines: Economics 221 and 222 or Economics 151 and one course from 323-339; Geography 101 or 110 and one course from 100, 201, 210, and 310; History 101 or 102 and 211; and Political Science 201 and 202.

North Central Association has requirements that differ from state and college requirements. It requires that teachers in the schools they accredit have the following minimum preparation in each of their teaching fields: *art*, seven course units; *English*, seven course units, a course and a half of which may be in speech; *foreign language*, six course units in each language taught; *mathematics*, six course units; *music*, seven course units; *physical education*, six course units; *science*, a total of seven course units with at least three and a half in any science taught; *social science* (economics, U.S. history, world history, political science, sociology), a total of seven course units with at least two and a half in any subject taught; *speech*, seven course units, five of which may be in English.

The appropriate education courses for students in secondary programs are: 301, 303, 304, 307, 308, 346, and a departmental 359.

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

Calvin College also offers a Bachelor of Science in Special Education degree in cooperation with Grand Valley State University. This program usually requires four years and two summers to complete. Admission is limited to students who wish to teach the hearing impaired or emotionally impaired. Students in cooperative programs with Grand Valley must complete a designated core of thirteen liberal arts courses, a group concentration in social studies, a six-course planned minor, six professional education courses, and the additional requirements for endorsement in special education. Additional costs include summer school tuition and, for those who are not Michi-

gan residents, approximately \$900 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 University should consult Mr. Thomas Hoeksema.

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

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

Students who are in the secondary program and desire a bilingual endorsement should major in Spanish, minor in Bilingual education, and follow the secondary education program. 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 elementary or secondary endorsement in bilingual education, are: IDIS 301; English 329; Spanish 304; Spanish 310; History 211 or 356; History 207 or 208; and Education 311.

The advisor for this program is Ms. Edna Greenway of the Department of Spanish.

## **Post-Baccalaureate Non-Degree Teacher Education Programs**

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

Required professional courses in this program include Education 301, 303, 304, and three course units of teaching internship. Prospective elementary teachers must complete Education 305, 309, 322, IDIS 213, Math 221, 222, and Education 324-25 and the elementary education science and physical education requirements. Prospective secondary teachers must complete Education 307-308 and a departmental 359.

Certification requirements for teaching majors and minors must also be met. Only courses in which a grade of 2.0 or higher is earned may be applied to the program.

Requests for admission to this program should be addressed to the Director of Certification. To be eligible students must have a bachelor's degree from an accredited college or university, a minimum cumulative grade point average of B- (2.5), two letters of recommendation, and must have completed at least twenty-five hours of supervised experience with school-aged people. Information regarding teacher certification should be obtained from the Coordinator, Ms. Jo Stuiwe.

Students in this program must pass the State of Michigan tests (basic skills test, major and minor subject tests, and an elementary education test for those in the elementary program) before certification will be granted. The basic skills test must be completed and the college must have the passing scores before students will be allowed to take directed teaching. Students should take the basic skills competency tests before being admitted to the teacher education program or, if transfer students, immediately upon arrival at Calvin College. Information regarding test dates can be obtained from the Education Department.

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

A minimum of eighteen (18) semester hours beyond initial certification is required for recommendation for a continuing teacher certificate. A few special endorsements may require more course work. If all course work is taken at Calvin, five Calvin course units fulfill this requirement. Courses in the major and minor(s) should be chosen in consultation with an appropriate departmental advisor (as listed on page 68-69) at the time the program of study is initiated. Previous course work and planned selections must be evaluated by the director of teacher certification. Only courses in which a grade of 2.0 or higher is received may be applied to the program. Students who graduated from and were recommended for this provisional certificate by Calvin College must take at least two of the course units at Calvin. All others must take at least three of the course units at Calvin. Students adding endorsements must pass the State of Michigan test in those areas.

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

This program includes education or psychology of exceptional children, introductory psychology, child or adolescent psychology, and one elective, all of which may be transferred from previous undergraduate or graduate work. In addition, the following courses must be taken at Calvin: Education 550, Theories of Learning Disabilities (1 unit), Education 551, Assessment and Diagnosis: Learning Disabilities (1 unit), Education 582, Curriculum and Instruction: Learning Disabilities—Elementary or Education 583, Curriculum and Instruction: Learning Disabilities—Secondary, Edu-

cation 548, Practicum: Learning Disabilities—Elementary or Education 549, Practicum: Learning Disabilities—

Secondary (1.5 units), Psychology 511, Introduction to Guidance and Counseling (for those seeking a secondary endorsement). Students must also pass the State of Michigan test for this area.

Application to Calvin College and to this program should be made to the Graduate Office. The advisor for this program is Ms. Myra Kraker.

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

The program includes the following courses: Art 215, Art for the Classroom Teacher; Psychology 151, Introductory Psychology; Psychology 201, Developmental Psychology: Lifespan; Psychology 313, Mental Health in the Classroom; Education 216, Education of Exceptional Children; Education 306, Mental Retardation; Education 310, Diagnosis and Prescription: Mentally Impaired; Education 330, Curriculum and Instruction: Mentally Impaired; and Education 347, Directed Teaching: Mentally Impaired. Students must also pass the State of Michigan test for this area.

Application to Calvin College and to this program should be made to the Graduate Office. The advisor for this program is Mr. Thomas Hoeksema.

*Post-Baccalaureate Non-Degree Education Program Leading to a Michigan Endorsement in Early Childhood Education.* This program is for those who have a bachelor's degree and a valid teacher certificate, and who wish to obtain an endorsement in Early Childhood Education.

The program includes the following courses: Psychology 204, Developmental Psychology: Child; Education 311, Child Language Development, English 329, Linguistics; or English 335, Language, Grammar, and Writing for the Elementary Classroom; Education 336, The Young Child in an Educational Setting; Education 339, Current Issues in Early Childhood Education; Education 344, Early Childhood Education Curriculum and Instruction: Field Experience. Students must also pass the State of Michigan test for this area.

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

*Post-Baccalaureate Non-Degree Education Program Leading to a Michigan Endorsement in Reading.* This program is for those who have a bachelor's degree and a valid teacher certificate and who wish to obtain an endorsement in reading at the elementary or secondary level.

The program includes the following courses: Education 322, Introduction to Methods of Teaching Reading; Education 324, Reading Problems in the Elementary Curriculum; Education 325, Reading and Language Arts in the Elementary School; Education 307, Reading in Content Areas: Secondary; Education 308, Reading Strategies: Secondary; Education 501, Advanced Educational Psychology; Education 513, Psychology and the Teaching of Reading; Education 540, Classroom Developmental Reading; Education 542, Diagnosis and Remediation of Reading Disabilities; Education

543, Teaching Reading Through Literature; and Education 595, Graduate Project. Students must also pass the State of Michigan test for this area.

Application to Calvin College and to this program should be made to the Graduate Office. The advisor for this program is Ms. Gloria Goris Stronks.

## **Preprofessional programs**

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

### **Law**

There is no prescribed program specifically designed for the student planning to enter a law school after graduation. Law school applicants must have a college degree and must take the Law School Admission Test, but law schools do not require that applicants have taken specific courses or have a particular major concentration. Prospective law school applicants should complete the requirements for a Bachelor of Arts degree as they are listed on pages 60-62. The prelaw advisor, Mr. Charles Strikwerda of the Department of Political Science, can advise students on suitable electives and can help them plan programs which provide good preparation for law school. Prelaw students should declare their interest in law at registration time and may wish to consult the prelaw advisor before or during each semester's registration. Juniors and seniors, whatever their field of major concentration, should choose their electives with care and in consultation with the prelaw advisor.

### **Medicine and Dentistry**

All students planning to enter the premedical or pre dental programs should consult Mr. Peter Tigchelaar of the Department of Biology, faculty advisor for the premedical and pre dental programs. Students should also note the general college core requirements on pages 60-62.

A student may select any major concentration and still meet the entrance requirements for all medical and dental schools. However, nationwide the majority of the applicants to medical and dental schools are science majors.

For those students not majoring in biology, the minimum science requirements for entrance into nearly all medical or dental schools are met by the following: Biology 131, 205, and 206. Biology 232, 323, and 331 may be substituted for 205-206. Chemistry 103-104, 261-262 (Chem 323 is required by some schools); and Physics 221-222 or the equivalent. Mathematics 132 and 143 are recommended, but Mathematics 161-162 is required by some medical schools.

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

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

All medical and dental schools give preference to students who have received at

least a baccalaureate degree. 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 requirement and one year of successful work in a recognized medical or dental school, the student will be eligible for the degree of Bachelor of Science in Letters and Medicine, or Bachelor of Science in Letters and Dentistry on the combined curriculum plan.

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

### **Ministry**

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

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

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

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

1. Language: at least two years of Greek, plus two years of another foreign language.
2. Humanities: a total of at least 24 semester hours (8 courses) in English, history, and philosophy, with at least two semester-length courses each in literature, history, and philosophy (preferably history of philosophy).
3. Natural science, social science, and speech: at least two courses in each.

The seminary encourages Calvin College students who plan to enter the Master of Divinity program to satisfy the above requirements by including the following courses in their programs: Greek 205-206; Philosophy 251 and 252; and Communication Arts and Sciences 100 or 101 and 200. Communication Arts and Sciences 203 and 240 are recommended and, in exceptional cases, either of these courses may be substituted for Communication Arts and Sciences 100 or 101.

The foreign language requirement may be met by the successful study of one foreign language through the second-year college level or by demonstrated competence at this level. This does not apply to the Greek requirement.

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

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

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

## **Professional-degree Programs**

### **Accountancy (B.S.A.)**

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

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

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

Students qualifying in accounting through either the Bachelor of Science in Accountancy or the Bachelor of Arts with a business major plus accounting emphasis may also combine their accounting coursework with the Cooperative Education Program sponsored by the Department of Economics and Business. This program combines five years of coursework and applied experience. Such programs should be worked out with a faculty advisor.

The Bachelor of Science in Accountancy program requires eight and one-half courses in accounting (Business 203, 204, 215, 301, 302, 305; three from 306, 310, 311, and 315), eight courses providing a general background in business and economics (Business 350, 260, 370, 380, Economics 221, 222, plus two from designated courses), and three courses in mathematics and computer science.

In addition to the specified courses from the Department of Economics and Business, the student must complete eighteen courses in other departments. This requirement differs slightly from the liberal arts core described on pages 60-62. It must in-

clude one core course each in history, philosophy, and religion and theology, plus an additional course from these departments or Interdisciplinary W10, Christian Perspectives on Learning; a course in the natural sciences; a course in political science, psychology, or sociology; a course in English or American literature; a course in the fine arts or foreign culture and another course in the fine arts or literature (if a student has not completed a foreign language through the second year college level, one of the courses in the fine arts and literature must be a foreign culture course); English 100, Communication 100 or 101, and a quarter course in basic physical education for each year in residence.

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

<i>First year</i>	courses
~ English 100	1
History 101 or 102	1
Mathematics 143-132 or alternative mathematics cognate	2
Philosophy 153	1
Psychology, sociology or political science core	1
Religion and theology core	1
Fine arts core	1
Interim elective	1
Physical education	.25
<i>Second year</i>	courses
Business 203, 204, 215, 260	3.5
Economics 221, 222	2
Physical education	.25
Communication 100 or 101	.5
Computer science	1
Literature core	1
Natural science core	1
Interim elective	1
<i>Third year</i>	courses
Business 301, 302, 305, 306, 315	5
Economics 323, 324, 325, or 326	1
Foreign culture core	1
History, philosophy, or religion and theology core	1
Interim elective	1
Physical education	.25
<i>Fourth year</i>	courses
Business 310, 311, 370	3
Business 380, 350	2
Economics 331-339, or a second course from 323-326	1
*Electives (may include 307 for CPA candidates)	3
Physical education	.25

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

### **Visual arts (B.F.A.)**

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

Before applying for admission to the program a student must have completed

three studio art courses in college. Application forms and information on requirements for admission are available in the Art Department. Submit applications the first Wednesday in October or the Wednesday before spring break.

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

The required eighteen-course program consists of three basic art courses (205, 209, 210), four from introductory courses to the various media (310, 311, 320, 325, 350, 360), one of which must be 310 or 311; four intermediate and advanced studio courses from 309, 312, 313, 314, 315, 321, 322, 326, 327, 351, 352, 361, and 362; four courses in history of art including 231 and 232 with two others from 233, 234, 235, 237, 238, 240, 241, 243, 245, and Classics 221; two advanced art interims; and 395. No more than eighteen courses in art may be applied to the degree. This program is not appropriate for those seeking teacher certification.

The liberal arts core must include:

**1. Five courses in history, philosophy, and religion**

One course in history from 101 and 102

Two courses in philosophy: 153 and 208

Two courses in religion: one course in biblical studies (excluding Interdisciplinary W-10) and 301.

**2. Two courses in mathematics and the sciences**

One course in mathematics

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

Two courses in the social sciences

One course in economics or political science

One course in psychology or sociology

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

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

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

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

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

One course in English, American, or world literature

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

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

## **Engineering (B.S.E.)**

Engineering is a design-oriented profession applying the principles of mathematics, science, economics, ethics, social sciences, and humanities with judgment to the utilization of energy and materials for the benefit of humanity.

Students at Calvin College may prepare to be engineers by following a program leading to a Bachelor of Science in Engineering (B.S.E.) degree with concentrations in civil, electrical, or mechanical engineering. This curriculum is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET). The B.S.E. degree is intended to prepare graduates for entry-level employment as engineers and for graduate study. Students interested in engineer-

ing should consult the department chair, Mr. Robert Hoeksema.

A primary goal of the department is to educate Christians to serve the Lord and others through technology. The means to that end is a program focused on Engineering design. Here the student meets the challenging value and technical issues that arise when societal problems are dealt with through technology.

The design experience starts with several projects in the first year. These, focusing on societal problems and issues, emphasize conceptual design, creativity, and teamwork. In addition, the concentrations contain two appropriate areas or tracks each culminating in a design course. For the civil engineering concentration, these are structures and hydraulics; for the electrical engineering concentration, analog and digital circuits; and for the mechanical engineering concentration, thermal systems and machines. And, engineering science courses taken emphasize applications to design. Finally, the design experience is completed by means of a capstone design project course sequence during the senior year. Within this design perspective, students are aided in the development of a thorough going Christian perspective toward technology and its applications.

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

<i>First year</i>	courses
Chemistry 103 or 105	1
Engineering 101 or 105, 102	1.5
Mathematics 161, 162	2
Physics 126, 186	1.25
Interdisciplinary W10, history, religion and theology core	1
Economics 151	1
English 100	1
Computer Science 141 or approved substitute	.5
Physical education, basic	.5
 <i>Second year</i>	 courses
Engineering 202	1
Engineering 205	1
Engineering 204	1
Engineering 284	.25
Mathematics 231, 261	2
Physics 225	1
Social science core	1
Philosophy 153	1
Literature core	1
Communication Arts and Sciences 100	.5
Physical education	.5

The above courses plus 319 and the senior design project courses (339, 340) provide a common core for the three concentrations in the B.S.E. program. Each concentration consists of six required engineering courses: Civil Engineering, 305, 318, 320, 321, 326, and 327; Electrical Engineering, 302, 304, 307, 311, 325, and 332; Mechanical Engineering, 305, 316, 322, 324, 333, 334 (3/4), and 382 (1/4). Because all students take the same project courses there is opportunity for interdisciplinary projects. The electives available also provide opportunity for students to develop an interdisci-

plinary flavor in their programs. The Engineering Seminar courses, 294 and 394, encourage the students to further broaden their perspectives. Hence, while the B.S.E. program requires some focus on a particular concentration there is opportunity for a broad education preparing students for the multi-faceted world of engineering design and professional practice.

*Admission.* The minimum requirements for admission are the completion of the first two years of the model program with a minimum cumulative grade point average of 2.3; a minimum grade of C- (1.7) in Chemistry 103 or 105, Computer Science 141, Mathematics 161, 162, Physics 126, 186, and 225; and a minimum grade of C (2.0) in the engineering courses and in Mathematics 231 and 261. Students must apply for admission to the Department of Engineering during the semester in which they are completing the common first two years of the model program and they must indicate their selected concentration. After a student is accepted, the chair of the department will prepare a counseling sheet for the student, indicating the remaining requirements.

*Probationary Admission.* Probationary admission is available to assist certain students. Students who wish to take 300-level courses but who have not completed the required courses with the stipulated minimum grade or who have not achieved the minimum required cumulative grade point average may be given probationary admission to the program. Such students may not have more than three course deficiencies nor may their cumulative grade point average be lower than 2.2 and, furthermore, all deficiencies must be removed within a designated period of time, not to exceed one year. Students who fail to meet these conditions are not eligible to reapply for admission to the program at a later date. Students should request probationary admission when applying for admission to the Engineering program. (As an alternative to probationary admission, students may delay taking 300-level courses until they have met all requirements for regular admission to the program.)

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

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

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

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

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

*Third and Fourth B.S.E. Years.* The final two years of the B.S.E. program require seventeen courses: ten and one-half course units in engineering (including the six concentration specific courses, 319, the engineering special topics interim, one and one-half course units in senior design project and one course unit of engineering elective), one basic science elective (such as an appropriate course from the major concentration in Chemistry, Geology or Physics; or Astronomy 201; or a 100-level Biology course), one-half course unit in business, one advanced mathematics course, and four liberal arts courses.

<i>Civil engineering concentration, third year</i>	courses
Engineering 305, Mechanics of Materials	1
Engineering 319, Intro to Thermal/Fluid Sciences	1
Engineering 320, Hydraulic Engineering	1
Engineering 326, Structural Analysis	1
Basic science elective	1
Engineering elective	1
Fine arts core	1
Religion and Theology core	1

<i>Civil engineering concentration, fourth year</i>	courses
Engineering 318, Soil Mechanics and Foundation Design	1
Engineering 321, Hydraulic Engineering Design	1
Engineering 327, Structural Design	1
Engineering 339, Senior Design Project	.5
Engineering 340, Senior Design Project	1
Advanced mathematics elective	1
Business 357, Business Aspects for Engineers	.5
Philosophy core	1
Literature core	1
Engineering Special Topic, interim	1

<i>Electrical engineering concentration, third year</i>	courses
Engineering 304, Fundamentals of Digital Systems	1
Engineering 307, Advanced Network Analysis	1
Engineering 311, Electronic Devices and Circuits	1
Engineering 319, Intro to Thermal/Fluid Sciences	1
Engineering 332, Analog Circuits and Systems Design	1
Advanced mathematics elective	1
Philosophy core	1
Religion and Theology core	1

<i>Electrical engineering concentration, fourth year</i>	courses
Engineering 325, Digital Circuits and Systems Design	1
Engineering 302, Engineering Electromagnetics	1
Engineering 339, Senior Design Project	.5
Engineering 340, Senior Design Project	1
Engineering elective	1
Business 357, Business Aspects for Engineers	.5
Literature core	1
Fine arts core	1
Engineering special topic, interim	1
Basic science elective	1

<i>Mechanical engineering concentration, third year</i>	courses
Engineering 305, Mechanics of Materials	1
Engineering 316, Heat Transfer	1
Engineering 319, Intro to Thermal/Fluid Sciences	1
Engineering 322, Machine Design	1
Engineering 334, Dynamics of Machinery	.75
Engineering 382, Instrumentation lab	.25
Basic science elective	1
Fine arts elective	1
Religion and Theology core	1

<i>Mechanical engineering concentration, fourth year</i>	courses
Engineering 324, Materials and Processes in Manufacturing	1
Engineering 333, Thermal Systems Design	1
Engineering 339, Senior Design Project	.5
Engineering 340, Senior Design Project	1
Engineering elective	1
Advanced mathematics elective	1
Business 357, Business Aspects for Engineers	.5
Philosophy core	1
Literature core	1
Engineering special topic, interim	1

### **Nursing (B.S.N.)**

Calvin College, in cooperation with Hope College of Holland, Michigan, offers a Bachelor of Science in Nursing (B.S.N.) degree which affirms the distinctive mission of both colleges. The program seeks to provide broad educational and professional nursing experience within the context of a Christian liberal arts education. It is designed to prepare beginning practitioners of nursing who are capable of integrating their knowledge, skills and attitudes to provide quality nursing care for people of all ages and in a variety of settings. Upon the completion of the degree, students are eligible to take state licensing examinations. Satisfactory scores enable a student to become a Registered Nurse (R.N.). Students should contact the Nursing Department for further information.

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

Students apply for admission to the department only after they have completed a two-year pre-nursing program. Those interested in nursing are asked to indicate their interest at the time they begin their studies at Calvin, so they will be counseled by advisors for the nursing program.

The two-year pre-nursing program requires nine courses in the sciences and social sciences closely related to nursing (Biology 131, 205, 206, 207, Chemistry 113, 114, Psychology 151, 201, and Sociology 151) and nine additional liberal arts courses (history, philosophy, religion and theology, plus an additional course from these departments or Interdisciplinary W10; a course in literature taught in English; a course in the fine arts; another course in fine arts, literature or foreign culture; a course in written rhetoric; a half course in speech; and one course unit in basic physical education).

By January 15 of the sophomore year, students must apply for admission to the Hope-Calvin Department of Nursing. Application forms are available in the Nursing department. To be eligible to begin the nursing program, a student must have completed the eighteen courses in the pre-nursing program, nine of which must be the required courses in the natural and social sciences. In order to be considered for admission to the program, a minimum cumulative grade point average of C+(2.3) is required, as well as a minimum grade of C- (1.7) in each of the natural and social sciences courses. Since enrollment in the final two years—the clinical nursing years—is limited, admission is selective, and completion of the pre-nursing program does not assure acceptance. Students desiring to transfer to Hope or Calvin for their junior and senior years, who have completed acceptable pre-nursing course requirements, will be considered for admission to the nursing program after qualified students from Hope and Calvin have been accepted into the program.

The third and fourth years require fourteen and one-quarter professional courses and four liberal arts electives, one of which must be a course in mathematics unless the student has completed four years of college preparatory mathematics in high school.

The typical nursing program is as follows:

<i>First year</i>	courses
Biology 131, 205	2
Chemistry 113, 114	2
Psychology 151	1
Sociology 151	1
English 100	1
Fine arts core	1
Religion, history, philosophy or Interdisciplinary W10, core	1
Physical education	.5
 <i>Second year</i>	 courses
Biology 206, 207	2
Psychology 201	1
Religion core	1
History core	1
Literature core	1
Philosophy core	1
Fine arts, literature or foreign culture	1
Communication 100	.5
Physical education	.5

<i>Third year</i>	courses
Nursing 315, 323, 331, 354, 372, 382/432, 386/446, 384/434, 387, 447	7.25
Mathematics 100 or 143 (or elective for students with high school math exemption)	1
Elective	1
<i>Fourth year</i>	courses
Nursing 382/432, 386/446, 384/434, 387/447, 429, 459, 476, 478, 484	7
Electives	2

The nursing courses are described on pages 186-188 under the Department of Nursing. Other courses are described under the department indicated.

### **Social Work (B.S.W.)**

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

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

The B.S.W. is composed of a social work major of twelve courses and several core requirements. The social work major includes theory courses, social work practice courses, and practicum courses in community agencies (Social Work 240, 250, 320, 350, 360, 370, 371, 372, 373, and three units of 380). Once admitted to the program, B.S.W. students must make separate application to the practicum. The core requirements include courses from the contextual disciplines (4), mathematics and natural sciences (2), social sciences (2) plus a 2- course social science cognate, arts and literature (3), competencies (3), and foreign language (4). Some core requirements are specified as can be seen from the following model program:

<i>First year</i>	courses
English 100	1
History core	1
Religion core	1
Mathematics core	1
Biology 115	1
Psychology 151	1
Language 101 and 102	2
Physical education 104	.25
Interim elective	1
<i>Second year</i>	courses
Economics 151	1
Political Science 201	1
Philosophy core	1
Social Work 240, 250	2
Sociology 151	1
Language 201 and 202	2
Physical education	.5
Interim elective	1
<i>Third year</i>	courses
Fine arts core	2
Literature core	1
Religion core	1
Communications 240	.5
Social Work 320, 350, 360, 370	4
Physical education	.25
<i>Fourth year</i>	courses
Social Work 361, 371, 372, 373, 380, 380	5
Electives	2.5
Interim: Social Work 380	1

The social work courses are described on pages 225-226 under the Department of Sociology and Social Work. Other specified courses are described under appropriate departments.

### **Recreation (B.S.R.)**

Students who wish to enter the field of recreation services, which includes such specialty areas as therapeutic recreation (recreation therapy), recreation management, youth leadership, and commercial and outdoor recreation, should complete the degree requirements for the Bachelor of Science in Recreation. The program requires nine course units in recreation (met by 201, 215, 303, 304, 305, 310, 346, and Physical Education 301) and four cognate courses: (Social work 350 or Psychology 201; Psychology or Sociology 310; Physical Education 220; Physical Education 380 and either 221 or 222) plus the core requirements designated for professional programs. Those interested in careers in Therapeutic Recreation should also take Recreation 314 and 324. Students are advised to consult with Mr. Glen Van Andel of the Physical Education and Recreation Department for more information about this program. A model program is as follows:

<i>First year</i>	<i>courses</i>
History core	1
Religion core	1
Mathematics core	1
Physical science core	1
Biology 115	1
Sociology 151	1
Psychology 151	1
English 100	1
Religion, history, philosophy, or Interdisciplinary W10, core	1
Physical education core	.25
 <i>Second year</i>	 <i>courses</i>
English core	1
Fine arts core	1
Communication 240	1
Physical education 201	1
Recreation 215	1
Option/Emphasis elective	1
Psychology/Sociology 310	1
Physical education 380 (sign up with advisor)	.5
Physical education 221 or 222	.5
Interim elective	1
Physical education core	.25
 <i>Third year</i>	 <i>courses</i>
Philosophy 153	1
Fine arts elective or 2 units of foreign language from 121, 122, 123, 201, 202	1
Recreation 303	.5
Recreation 304	1
Recreation 305	1
Physical education 220	1
Social Work 350 or Psychology 201	1
Option/Emphasis elective	1
Physical education core	.5
Interim elective	1
Physical Education 301	.5
 <i>Fourth year</i>	 <i>courses</i>
Recreation 310	1
Theology 301	1
Option/Emphasis electives	2
Interim elective	1
Recreation 346 (to be taken after all major coursework is completed)	3

## **Professional combined-curriculum programs**

### **Communication disorders**

Students who wish to enter professions dealing with communication disorders, such as speech-language pathology, or audiology may qualify for the degree of Bachelor of Science in Communication Disorders from Calvin College. The advisor for the program is Ms. Judy Vander Woude. 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; the degree is granted after the successful completion of the courses at Michigan State University. The program is appropriate for students wishing to do graduate work in speech-language pathology or in audiology.

The liberal arts requirements include one core course each in history, philosophy, and religion with an additional course from one of these departments; Biology 115 or equivalent course; Computer Science 100; Mathematics 143; Psychology 151 and 204; a core course in either economics or political science; a core course in literature plus an additional course in literature, fine arts, or foreign culture; English 100 and 329; and three-quarters course credit in basic physical education.

The required courses in the Department of Communication Arts and Sciences are: 100 or 214, 140, 203, 215, 216, 308, 309, and an approved interim.

Students wishing to practice speech therapy in the schools will also need to seek appropriate teacher certification and should consult with Ms. Vander Woude or Mr. Stegink of the Education Department.

### **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 Ms. Bev Klooster of the Department of Biology. The following courses are prescribed: Biology 131, 205, 206, 207, 307, and 333; Chemistry 103, 104, and either 253, 323, 383, and one other chemistry course; or 261, 262, 323, 383; one mathematics course from 161, 131, or 143; English 100; Physics 223; History 101 or 102; one course in philosophy; one course in religion and theology; one additional course from history, philosophy, religion and theology, or Interdisciplinary W10; two courses in different departments from economics, political science, psychology, and sociology; three courses from art, literature, music, speech, and foreign culture including one from English, American, or world literature (one of these requirements may be fulfilled by two years of high school foreign language); the total of one-half course unit credit from the core courses in speech and three-fourths course unit credit in basic physical education.

Students should apply to accredited schools of medical technology during the fall semester of their junior year. Calvin College is affiliated with the schools of Medical Technology at Butterworth Hospital in Grand Rapids and William Beaumont Hospital in Royal Oak, Michigan. Students may do their clinical internship at these or other approved institutions to which they are admitted.

One possible student program is as follows:

<i>First year</i>	<i>courses</i>
Biology 131, 205	2
Chemistry 103, 104	2
English 100	1
History 101 or 102	1
Interim	1
Physical education	.5
Other required courses and electives	2

<i>Second year</i>	courses
Biology 206, 207	2
Chemistry 253 or 261, 262	1 or 2
Other required courses	4 or 3
Interim	1
Physical education	.5
Physics 223	1

<i>Third year</i>	courses
Biology 307, 333	2
Chemistry 323 and 383	1.25
Chemistry 201, 304, or other chemistry course	1
Other required courses and electives	3.5
Interim	1

*Fourth year*

Internship in an accredited school of medical technology.

### **Occupational Therapy**

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

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

Calvin College offers a 3-2 combined curriculum program with the Program in Occupational Therapy, Washington University School of Medicine in St. Louis, Missouri. A student participating in this program would spend three years at Calvin College taking the specific courses listed below, apply for acceptance into the program at Washington University, and if accepted, transfer to Washington University for the two clinical years. Upon successful completion of that program, the student would receive a Bachelor of Science in Letters and Occupational Therapy from Calvin College and a M.S.O.T. from Washington University. Although this program requires five years to complete, the student would receive a Masters degree from Washington University. A student applying from Calvin will receive preferential status in his/her application.

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

Art 215 or 151

Biology 131, 205, and 206

Chemistry 113 and 114

Communication Arts and Sciences 100

Contextual disciplines: four courses

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

Economics 151 or Political Science 151 or 201  
 English 100 and one course in literature  
 Foreign language, through the second year college competency (0-4 semesters)  
 or one foreign culture course  
 Mathematics 143  
 Music: one course from 133, 236, 238, or 241  
 Physical Education: 3/4 course unit credit  
 Physics 223  
 Psychology 151, 201 or 204, and 212  
 Sociology 151 and 217

## Preprofessional transfer programs

### Architecture

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

<i>First year</i>	courses
Art 201, Art 205	2
English 100	1
Engineering 103	1
Mathematics 160/161, [162]	2
Interdisciplinary W10, Christian Perspectives (interim)	1
Economics 151 or 221	1
Physical education	.25
 <i>Second year</i>	 courses
Art 202, 209	2
Chemistry, if none in high school; biology; or psychology	1
Physics 221	1.5
Literature core	1
Religion and theology core	1
Philosophy 153	1
Communications 100	.5
History, political science or sociology core	1

## **Natural resource programs**

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

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

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

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

There are two paths a student may follow to gain professional competence in these areas:

1. Completion of a Bachelor's degree at Calvin followed by graduate study. This is most appropriate in the area of resource ecology. A major at Calvin should be followed by graduate study.
2. Transfer after two years at Calvin to a professional program elsewhere. This is appropriate in the areas of resource policy and resource management. Normally students should complete the first two years of the Biology major, a year of mathematics, a year of chemistry, and courses in computer science and economics. The remaining courses should be selected with the requirements of the transfer school in mind.

## **Optometry**

Students wishing to become optometrists may complete three years at Calvin before transferring to a school of optometry for their final four years, culminating in a Doctor of Optometry (O.D.) degree. A pre-optometry program which satisfies admission requirements of the School of Optometry at Ferris State University in Big Rapids, Michigan, includes the courses specified below. Students wishing to transfer to other schools should correspond with those schools and consult the optometry advisor, Ms. Bev Klooster of the Department of Biology, to determine appropriate courses. Applications for admission to the Ferris State College of Optometry are accepted between October 1 and February 1.

<i>First year</i>	courses
Biology 131, 232	2
Chemistry 103, 104	2
English 100	1
Mathematics 161	1
Psychology 151	1
Humanities core	1
Interim	1
Physical education	.25
<i>Second year</i>	courses
Biology 206; 207 or 336	2
Chemistry 261, 262	2
Physics 221, 222	2
Psychology or Sociology	1
Humanities core	1
Interim	1
Physical education	.25
<i>Third year</i>	courses
Chemistry 323, 383	1.25*
Mathematics 143 or 243	1
Business 203, 204, or 260	1
Electives	4
Interim	1
Physical education	.25

\*One biochemistry course with laboratory is required.

## Pharmacy

Students wishing to become pharmacists may complete two years at Calvin before transferring to a school of pharmacy for their final three years, culminating in a B.S. degree in pharmacy, or to a graduate school of pharmacy for four years, culminating in a Pharm.D. degree (Doctor of Pharmacy). A pre-pharmacy program which satisfies admission requirements of the School of Pharmacy at Ferris State University in Big Rapids, Michigan, is given below. Students wishing to transfer to other schools should correspond with those schools and consult the pharmacy advisor, Ms. Bev Klooster of the Department of Biology, to determine appropriate courses. Students following normal programs should apply for admission to a school of pharmacy midway through their second year.

<i>First year</i>	courses
Biology 131, 232	2
Chemistry 103, 104 or 105, 201	2
Mathematics 143 and 132	2
English 100 and either 200 or 235	2
Physical education	.25
<i>Second year</i>	courses
Biology 205, 206	2
Chemistry 261, 262	2
Physics 223	1
Economics 151	1
Political Science 201	1
Psychology 151	1
Physical education	.25

## **Physical Therapy**

The education and training for entrance into the field of Physical Therapy requires completion of a baccalaureate (in the process of being discontinued) or a master's degree professional program. The preparation for entry into and completion of a graduate program in PT varies from school to school. The following examples will serve to illustrate the various types of programs. A student may complete a minimum of two years of prerequisite courses and be accepted into a professional school program, and following completion of two years in the professional program is awarded a B.S. degree. Upon completion of one additional year (the third year of the professional program and fifth year overall) the student is awarded an M.S.P.T. (Master's Degree in Physical Therapy). A second type of program accepts students after three years of prerequisite courses and after an additional three years in the professional program awards the M.S.P.T. degree. A third approach is for a student to complete a degree program at Calvin College with a major in any discipline so long as they have included the specific courses prerequisite to acceptance into a graduate program in Physical Therapy. Following admission to the graduate program, the M.S.P.T. degree will be awarded upon the completion of the three-year professional program.

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

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

## **Other Professional Programs**

### **Criminal Justice**

The group major in criminal justice provides the foundation, context, and general criminology and delinquency content for students interested in entry level positions in law enforcement, the courts, and corrections. It is founded on a Christian mission and purpose which is committed to probing the social, ethical, political, and psychological implications and assumptions that often lie behind criminal justice structures and actions. This mission finds expression in coursework which is focused in integrating theoretical and practical criminal justice concerns.

The major is composed of thirteen courses, nine of which are taken from the Sociology Department, two from the contextual disciplines, and two from either psychology or political science. All of the general college core requirements must also be met. Therefore careful advance planning is necessary to fulfill all requirements in four

years. To this end, interested students should consult with the advisor, Mr. T. Rottman of the Sociology Department, no later than April of their sophomore year. The typical program is as follows:

<i>First year</i>	courses
Biology core	1
English 100	1
History core	1
Foreign language 101 and 102	2
Mathematics core	1
Physical education	.25
Religion core	1
Sociology 151 or Psychology 151	1
Interim	1
 <i>Second year</i>	 courses
Communication 100	.5
Fine arts core	1
Foreign language 201 and 202	2
Psychology 212 or Political Science course	1
Philosophy 153	1
Physical Science core	1
Sociology 211, 212	2
Interim	1
 <i>Third year</i>	 courses
Electives	2
Fine arts core	1
Literature core	1
Philosophy 205 or Religion 332	1
Physical education	.25
Political Science or Psychology course	1
Sociology 250 or 306	1
Sociology 319	1
Interim (approved)	1
 <i>Fourth year</i>	 courses
Contextual core	1
Criminal Justice 380	2
Electives	2
Philosophy 202, 207 or History 356	1
Sociology 317, 320	2
Physical Education	.5

# GRADUATE PROGRAMS

## **Christian graduate education**

The graduate programs, as well as the undergraduate programs, at Calvin College are based on the foundation of the Christian faith as reflected in the Reformed standards. This finds expression at the graduate level in the study of professional fields where students are encouraged to develop value judgments which are grounded in the knowledge of their relationship to God, to themselves, to fellow human beings, and to the world; and which acknowledge the Lordship of Christ over all.

Calvin College offers Master of Education Degree (M.Ed.) programs in Curriculum and Instruction, Learning Disabilities, Reading, and School Administration. In addition, post-baccalaureate non-degree programs are available for teacher certification.

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

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

## **Master of Education Degree**

The Master of Education (M.Ed.) programs serve elementary and secondary teachers and administrators who wish advanced professional training and who need to satisfy the requirements for continuing certification or additional endorsements.

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

## **ADMISSION**

The requirements for admission are the following: (1) an appropriate bachelor's degree from an accredited college or university with a grade point average of 2.8 or above on a 4.0 scale; (2) satisfactory Graduate Record Examination general test scores; (3) teacher certification, or eligibility for it; (4) normally, one to two years of teaching experience; (5) two letters of recommendation, at least one attesting to teaching ability; (6) official transcripts of all academic work taken since high school graduation, and (7) a completed application form, including an autobiographical essay of about five hundred words describing previous experience and future professional goals. Inquiries and applications for admission should be sent to the Director of Graduate Studies. Deadlines for submitting applications and supporting materials are the following: June 1 for summer session, August 1 for fall semester, and January 1 for spring semester.

## REQUIREMENTS FOR THE DEGREE

After admission to the program, each student is responsible for completing an appropriate program under the supervision of an academic advisor in the relevant area. All programs must include a minimum of nine courses, five of which must be taken in courses numbered 500 or above. The program must be completed within six years from the date of admission with a cumulative average of at least B (3.0 on a scale of 4.0), and only courses with grades of C+(2.3) or higher will be applied to the fulfillment of degree requirements.

The minimum requirements for the M.Ed. in Curriculum and Instruction or in the three specialty areas of Learning Disabilities, Reading, and School Administration are as follows:

1. **Context of Education:** Two courses are required. One must be an approved course in psychology or sociology of education (Psychology 501 or Sociology 501), the other an approved course in history or philosophy of education (Education 510 or Philosophy 501).
2. **Program area and subject matter concentration:** Five courses must be completed either in one of the specialty areas (learning disabilities, reading, or school administration) or in curriculum and instruction. In the specialty areas, four courses in the appropriate concentration and one elective are required. The program in curriculum and instruction includes two required courses in educational theory (Education 512 and 580) and a subject matter concentration of three courses in a major curricular area (art, English, music, religion and theology, science studies, or another area approved by the student's M.Ed. advisor and the Director of Graduate Studies).
3. **Research seminar and project:** Registration for two courses is required, a seminar on research methods (Education 594) and a master's project seminar (Education 595 or 596). Submission of a graduate project is also required. Both the project proposal and the completed project must be approved by the project advisor, a second reader (for the project only), the student's M.Ed. advisor, and the Director of Graduate Studies.

### Free Course

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

### Academic Probation and Dismissal.

Graduate students will be placed on academic probation if their cumulative grade point average falls below 3.0. They will be advised in writing of their probationary status. They will be removed from probation if they raise their cumulative grade point average to 3.0 or higher. The Department of Veterans Affairs will be notified of any student receiving veteran's benefits who remains on probation after taking five course units.

Graduate students are subject to dismissal if after completing four course units their cumulative grade point average falls below 2.7. Such students will be informed in

writing of their dismissal. The Department of Veterans Affairs will be notified of any student receiving veteran's benefits who is subject to dismissal. Graduate students who have been dismissed and who wish to be readmitted to one of the graduate programs must submit an application to the Graduate Studies Committee.

### **Transfer of Credit**

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

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

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

### **Registration**

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

### **Application for Degrees.**

In addition to the formal requirements for graduate degrees described above, students must complete an M.Ed. Counseling Agreement with their graduate advisor, subject to approval by the Director of Graduate Studies. The Counseling Agreement is normally completed before students begin taking courses. Graduate students must meet all of the conditions specified in that agreement within six years to be eligible for a degree. They must file a formal application for a degree at the Office of the Registrar at least six months before the expected date of graduation. If students are also fulfilling requirements for a continuing teacher certificate or an additional teaching endorsement, they must make formal application to the director of teacher certification not later than six months before they complete the certification requirements.

### **Post-Baccalaureate Non-Degree Teacher Education Program.**

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

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

transferable to a master's degree program at a later time, if applicable to a particular concentration. (See Programs for Teacher Education for requirements.)

*Post-Baccalaureate Non-Degree Special Education Program Leading to a Michigan Endorsement in Learning Disabilities.* This program is for those who have a bachelor's degree and a teacher certificate and who wish to obtain an endorsement in learning disabilities at the elementary or secondary level. (See Programs for Teacher Education for requirements.)

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

*Post-Baccalaureate Non-Degree Program Leading to a Michigan Endorsement in Reading.* This program is for those who have a bachelor's degree and wish to obtain an endorsement in reading at the elementary or secondary level. (See Programs for Teacher Education for requirements.)

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



# COURSES

## Description of courses offered by the various departments

The symbols *F* (Fall), *I* (Interim), and *S* (spring) indicate when each course is offered. The term *core* designates those courses in each department which meet the general graduation or core requirements of the discipline. The few courses which carry more or less than a single course credit are indicated; all others carry a single course credit. Interim courses numbered W10 through W49 have no prerequisites; those numbered W50 through W99 have either prerequisites or other conditions. (A catalog of interim courses is published separately.) Courses numbered 500 and above and those marked with an asterisk (\*) may be applied to graduate degree programs.

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

## INTERDISCIPLINARY<sup>1</sup>

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**101 Christian Perspectives on Learning** (core). This introductory study of the relationship between learning and the Christian faith begins with a consideration of some contemporary alternatives and challenges to Christianity and proceeds to an examination of current statements about the nature of Christian faith and discipleship. The course culminates in a study of how different views of the Christian faith and of its relationship to culture produce different kinds of secular and Christian colleges. The ground is thus laid for a critical analysis of one's academic experience at Calvin College

**201 Introduction to Third World Development.** S. (See Third World Development Studies)

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

high school chemistry or physics, and one college science course, or consent of the instructor. *Mr. A. Leegwater.*

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

**234 The Contemporary American Religious Situation.** \*S. A description and analysis of current American religious developments in historical, sociological, and theological perspective. Institutional and non-institutional developments, within and outside the Judeo-Christian tradition, will be examined. Satisfies an elective requirement in contextual disciplines. *Mr. J. Primus, Mr. W. Smit.* Not offered 1994-95.

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

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

261 **South African Culture and Literature.** (See Dutch 261 for course description)

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 audiovisual aids. Each student will observe in local bilingual classrooms. Course includes lesson planning and videotape mini-lessons. Prerequisite: Spanish 202. *Ms. E. Greenway.*

395 **Seminar in International Development Studies.** S. (See Third World Development Studies)

590 **Independent Study.** (F, I, S, and SS) Students normally register for this course in conjunction with a course in one of the disciplines. Prerequisite: admission to a Master's degree program.

## GRADUATE COURSES

6XX **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.*

## JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

W10 **Christian Perspectives on Learning.** *Staff.*

W11 **Society, Technology, and Environment: A Geography of the Netherlands.** *H. Aay, R. Hoeksema.*

W13 **Shadowlands: The World and Work of C.S. Lewis.** *K. Clark.*

W14 **El Salvador: The Whole World in a Very Small Place.** *R. Hoksbergen, D. Miller.*

W15 **Responsible Rebellion: The Relationship of Art to Social Change.** *H. Bonzelaar.*

W16 **India: A Multicultural Mosaic.** *C. Strikwerda, W. Van Vugt.*

W18 **Doxology and Discord: The History of Christian Worship.** *D. Diephouse.*

W21 **From Sojourner Truth to Anita Hill: The Lives of African-American Women in America.** *R. Jelks, M. Loyd-Paige.*

W22 **The Art of Life and Death: Testimony from Film, Music, and Literature.** *R. Plantinga, T. Thompson.*

W23 **Images as Ideas and Information.** *J. Wiersma.*

W24 **Developing Managerial Performance in the Not-for-Profit Organization.** *R. Karppinen, P. Vande Guchte.*

W28 **Nazi Germany.** *C. Hegewald.*

W29 **The Cultural Feast and Famine: An Introduction to Food, Society, and World Hunger.** *B. Klooster, U. Zylstra.*

W32 **Jurassic Park: The Sequel.** *A. Koop, C. Menninga.*

W50 **Religions and Cultures of the Pacific.** *W. Stob.*

W51 **Interim in Kenya: Christian Community Development.** *G. Monsma.*

W52 **Ethics in Engineering and Management.** *D. Cook.*

W54 **Science, Technology, and Reality.** *L. Van Poolen.*

W56 **Critics of Science and Critics of the Faith.** *H. Van Till.*

W57 **Medical Ethics.** *H. Bouma.*

W58 **Elementary School Science Teaching: Outdoors and Indoors.** *S. Stegink.*

W59 **Loss, Grief, and Healing.** *C. Kreykes Brandsen.*

301 **Introduction to Bilingual Education.** *E. Greenway.*

## ACADEMIC SERVICES

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*J. Heerspink (acting-director), R. Buursma, L. Bosch, M. Douglas, A. Emerson, B. Morrison, M. Vriend*

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

Courses designed to review precollege work, designated with numbers below 010, do not carry credit for graduation. They are, however, recognized by the Registrar and the Office of Financial Aid as registered units, which count toward full-time status and toward financial aid eligibility. Students who enroll in non-credit courses are generally eligible for a fifth year of financial aid if an additional amount of time becomes necessary to complete a degree program. Non-credit courses appear on student transcripts with grades which do not carry honor points. Failure to complete a prescribed Academic Services course (ASC) with a passing grade may make a conditional or probational student subject to dismissal. Students normally register for three credit courses in addition to the required non-credit units for a total of not more than four and one-quarter course units.

**003 Review of Written English as Second Language.** F and S, no credit. This course provides extensive practice in written English for students whose native language is other than English. It includes study of grammar and vocabulary development and instruction in writing. Students are assigned to this course on the basis of scores on the locally administered placement test of English Language Proficiency, which is administered again at the end of the course. Enrollment in English 100 the following semester will require a minimum score of 85 on the locally administered placement test and the recommendation of the ASC 003 instructor and the English Department. *L. Bosch.*

**004 Precollege Mathematics for the Liberal Arts Student.** F and S, no credit. This course is 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 ASC 005, Mathematics 100, Mathematics 143, Mathematics 221, Economics 151, Astronomy 110, Biology 111, Chemistry 110, Physical Science 110, and other core courses. *Mr. A. Emerson.*

005 **Precollege Mathematics for the Business and Science Student.** F and S, no credit. This course is an intensive study in the mechanics of algebra, manipulation of algebraic expressions, and graphing. Materials are presented with an emphasis on development of problem solving skills and mathematical reasoning. The course is intended as preparation for Mathematics 143/132 or 110 for students in mathematics-oriented majors whose preparation in mathematics is inadequate. *Mr. A. Emerson.*

006 **Methods and Motivation for College Study.** F and S, no credit, half course. This course presents methods of classroom and textbook study strategies for college course work and considers problems of self-motivation and self-discipline, with reference

both to principles of the Christian faith and to resources within the college community. Concurrent registration in a reading and lecture course such as a history, political science, psychology, or sociology course, as well as a final grade of C or higher in ASC 006, is required for successful completion of this course. *Mr. R. Buursma, Ms. J. Heerspink, Ms. M. Douglas, Ms. M. Vriend.*

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

## ART

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*Professors R. Jensen (chair), H. Bonzelaar, C. J. Huisman, C. S. Overvoorde, C. Young*  
*Associate Professors F. Speyers\*, A. Greidanus-Probes*  
*Assistant Professor H. Luttkhuizen*

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

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

The nine-course major program in art history is any pair of ancient and modern courses from 201, 202, 231, 232; one from 233, 234, or Classics 221; one from 235, 237; one from 238, 240; one from 241, 243, 245; one from 393, 397, or an approved art history interim; and two electives from 233, 234, 235, 237, 238, 240, 241, 243, 245, 393, 397, Classics 221 or an approved art history interim. Either a second foreign language or Phil 208 and 378 is recommended. The six-course minor requires any pair of ancient and modern courses from 201, 202, 231, 232; one from 233, 234, or Classics 221; one from 235, 237; one from 238, 240; and one from 241, 243, 245.

The ten-and-a-half-course art education major for teachers, k-12, must include 205, 209, 215, 216, 231, 232, 310 or 311, 320 or 325, and 210 or 240. It is recommended that one of two remaining electives be an intermediate level media class. A second elective may be any art class except 151. The seven-course secondary teacher education minor is 205, 209, 215, 216, 231, 232, and one studio course from 310, 311,

320, 325, or 350. The elementary teacher education minor is 205, 209, 215, 231, 232, one course from 310, 311, 320 or 325, and one elective, which may be Philosophy 208. All art education majors are required to participate in the senior exhibition during the spring semester of their senior year. Directed teaching in art is available only during the spring semester. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department. The advisors for this program are Ms. Helen Bonzelaar and Ms. Anna G. Probes.

The Bachelor of Fine Arts (B.F.A.) program, which has a greater professional emphasis, is described on pages 80–81. This program is not a preparation for teacher certification. The program advisor is Mr. Carl Huisman.

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

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

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

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

## ART EDUCATION COURSES

**215 Principles of Elementary Art Education.** F and S, core for students in elementary education and recreation majors. The course introduces the nature of art and philosophy of art in education and includes methods and techniques for organizing and motivating art introduction on the elementary school level. The introduction to the art which man has produced illustrates the role of art over the ages. The course includes lectures, demonstrations, and art teaching experiences in the school. Research paper required. Open to first-year students only by permission of the instructor. *Ms. H. Bonzelaar.*

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

## STUDIO COURSES

**205 Design.** F and S. A course that teaches two- and three-dimensional design through the use of basic art elements and principles. Materials fee. *Ms. A.G. Probes, Mr. F. Speyers, Mr. H. Luttikhuisen.*

**209 Introduction to Drawing.** F and S. Students are taught composition while being introduced to drawing media and to the basic proportions of the human figure. The course includes the historical development and terminology of drawing. Prerequisite: 205 or permission of the instructor. Materials fee. *Ms. A.G. Probes, Mr. C.S. Overvoorde.*

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

**309 Advanced Drawing.** S. A more advanced course in drawing providing an op-

portunity for students to search and experiment with new ideas and forms and to develop personal ideas and themes. Materials fee. Prerequisite: 210. *Ms. A. G.-Probes.*

**310 Introduction to Sculpture.\*** F and S. Students are introduced to the basic sculptural techniques of modeling, carving, mold-making, constructing, casting, and assembling through slide lectures and demonstrations. Projects and assigned readings. Materials fee. Prerequisite: 209 or permission of the instructor. *Mr. C.J. Huisman.*

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

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

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

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

**320 Introduction to Printmaking.\*** F and S. An introduction to the four basic

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

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

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

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

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

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

**350 Communication Design I.** S. Introduction to the synthetic relationship of Macintosh software to graphic design as a problem-solving approach to visual communication. Emphasis on learning to integrate visual literacy with software dexterity in order to present information with meaning and purpose. Typography, illustration and photography are utilized to develop visual prob-

lem-solving methodologies which stimulate creativity and innovation. Sequentially selected projects are designed to develop visual vocabulary and encourage innate creative potential. Prerequisite: Permission of the instructor; art majors must have completed Art 209. *Mr. F. Speyers.*

**351 Communication Design II.** S. Investigate late 20th Century practices in publishing: How to translate effectively linear print information for an increasingly visually-oriented society. Applicable Macintosh software is utilized to demonstrate and formulate the synergistic integration of art and typography. Experimentation and personal style are encouraged. Studio projects include magazine formula and format, direct mail, 3-Dimensional point of purchase, book jackets, corporate identity, space advertisements and pro bono projects. Prerequisite: 350 or permission of the instructor. *Mr. F. Speyers.*

**352W Communication Design III.** S. Interweaves time-honored principles of visual communication with advanced Macintosh software applications. Essential elements of Gestalt perception, sequential storyboarding and visual resonance are integrated to reach specific market audiences. Emphasis will be on personal development of technical and creative skills utilizing script writing, still photography, video, and electronic animation. This course meets the writing program requirement. Prerequisite: 351 or permission of the instructor. *Mr. F. Speyers.* Not offered 1994-95.

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

**361 Intermediate Photography.\*** S. Continued exploration of the medium of photography in black and white with an emphasis on the development of an individual ap-

proach to photography. Basic color processes are introduced. Materials fee. Prerequisite: 360. *Mr. R. Jensen.*

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

**390 Independent Study.\*** F, I, S. A student wishing to register for this course must have an introductory course in the medium and submit a written proposal to the chair for approval. *Staff.*

**395 W Seminar and Exhibition.\*** F and S. An opportunity from a Christian perspective to integrate the study of art history, aesthetics, and the other liberal arts as well as the work in studio art. The seminar will include regular meetings with the faculty, writing a scholarly statement of the candidate's philosophy of art, a study of exhibitions in art galleries and museums, and the presentation of a solo show. One unit taken over both semesters. Prerequisite: senior status and a concentration in art. *Mr. C. Young.*

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

350 Communication Design I.

351 Communication Design II.

352 Communication Design III.

360 Introduction to Photography.

361 Intermediate Photography.

362 Advanced Photography.

## ART HISTORY

**201 Architectural History I.** F, core. A survey of the history of architecture in Ancient to early Renaissance cultures. A study of the interrelations of design, building technology, and cultural patterns of development and expectation from pre-history, small scale, Egyptian, Greco-Roman, Islamic, Christian Byzantine and Gothic and early Renaissance cultures. *Mr. C. Young.*

**202 Architectural History II.** S, core. A survey of the history of architecture in Renaissance to Contemporary International cultures. A study of the interrelations of design,

building technology, and cultural patterns of development and expectation of Renaissance Italy; Neo-Classical and Romantic Europe, Japanese, Modern Organic and International Style, and Contemporary Modern and Postmodern International Architecture. *Mr. C. Young.*

**231 An Introduction to the History of Art.** F, core. A survey of the history of architecture, painting, and sculpture in Ancient, Medieval, and early Renaissance times. A study of the character of Ancient art from cave art 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 and non-western art. *Mr. H. Luttkhuizen.*

**232 An Introduction to the History of Art.** S, core. The study of painting, sculpture, and architecture from the Italian Renaissance through international post-modernism. *Mr. H. Luttkhuizen.*

**233 W 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. Prerequisite: sophomore standing or above. *Mr. H. Luttkhuizen.* Not offered 1994-95.

**234 W Northern Renaissance Art.** S, core. A study of painting, sculpture, and printmaking from 1350-1600 in Netherlandish and German culture. Special attention will be given to the rise of naturalism, to the relationship between art and religious devotion, and to the emergence of an art market. Jan van Eyck, Hieronymus Bosch, Pieter Bruegel, and Albrecht Dürer will be some of the major figures studied. Slide lectures and discussions; a research paper is required. Prerequisite: sophomore standing or above. Not offered 1994-95.

**235 W Italian Renaissance Art.\*** F, core. A study of the painting, architecture, and sculpture of the fifteenth and sixteenth centuries, with a focus on the Renaissance of Italy. The course presents an historical survey of the art produced in the centers at Florence, Rome, and Venice from the late Gothic pe-

riod to the High Renaissance, followed by a study of the Mannerism of the sixteenth century. Prerequisite: sophomore standing or above. *Mr. C. Young.*

**236 W History of Dutch Paintings.\*** S, core. An historical survey of Dutch and Flemish painting. The art produced in Antwerp, Haarlem, Leiden, Utrecht, Amsterdam, Brussels, and Delft is studied, tracing the rise and development of specialists in genre, religious, still-life, portrait, and landscape painting. Emphasis is on the works of the major masters of the time. Prerequisite: sophomore standing or above. *Mr. C. S. Overvoorde.* Not offered 1994-95.

**237 W Baroque and Rococo Art History.\*** S, core. A study of the stylistic variations of seventeenth- and eighteenth-century painting, sculpture, and architecture in Western Europe. The influence on the visual arts of cultural changes in national politics, philosophy, and art training following the Reformation and Counter-Reformation is addressed. Bernini, Caravaggio, Rubens, Velasquez, Rembrandt, Poussin, Watteau, Chardin, Hogarth, and Wren are among the major figures studied. A research paper is required. Prerequisite: sophomore standing or above. *Mr. H. Luttkhuizen.*

**238 W Origins of Modern Art: Nineteenth Century.\*** S, core. A study of the sculpture, painting, and architecture of nineteenth-century Europe with an emphasis on the artistic developments of Northern Europe. The course traces the successive stylistic movements of Neo-Classicism, Romanticism, Realism, Impressionism, Symbolism, and Expressionism as they emerge against the background of the official Academy of Art. A research paper is required. Prerequisite: sophomore standing or above. *Mr. C. Young.* Not offered 1994-95.

**240 W Twentieth Century Art and Architecture.\*** F, core. A study of the visual arts from Impressionism to the present. Architecture is studied in relation to programming, technology, materials, and site, beginning with Eiffel and continuing through the twentieth century with Wright, Le Corbusier, and Mies van der Rohe. Prerequisite: sophomore standing or above. *Mr. C. Young.*

241 W **Asian Art.**\* S, 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. Prerequisite: sophomore standing or above. *Mr. C. Young.*

243 W **Art of the Americas.**\* S, core. An interdisciplinary study of art works from Pre-Columbian and Native American and Canadian cultures such as the Mayan, Aztec, Inca, Navaho, Inuit, and Kwakiutl. The course will concentrate on cultural development before western contact, but issues of cultural interaction between native and immigrant European cultures will be addressed with regard to surviving styles and newly developed styles for western markets. Slide lectures and discussions; a research project is required. Prerequisite: sophomore standing or above. Not offered 1994-95.

245 W **African and Oceanic Art.**\* F, core. An interdisciplinary study of art works from Africa and Oceania (Polynesia, Melanesia, Australia). Special attention will be given to the relationship between religious commitments and artistic practices within these cultures. Slide lectures and discussions; a research paper is required. Prerequisite: sophomore standing or above. *Mr. C. Young.* Not offered 1994-95.

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

393 W **Museum Studies.**\* F and S, tutorial. An advanced course providing opportuni-

ties for studying the theory and practice of museum education and/or exhibition curatorial development and installation. Prerequisites: five courses in art history and permission of the instructor. *Mr. Luttikhuizen.*

397 W **Methods in Art Historiography.**\* F and S, tutorial. An advanced course in which students will study the history and interpretative strategies of art historiography. Prerequisites: senior status and the permission of the instructor. *Mr. H. Luttikhuizen.*

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.*

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1993.*

W10 **Design Essentials.** *A. Greidanus Probes.*

W11 **Tents, Huts, and Houses: Learning from Architecture Without Architects.** *C. Young.*

W50 **Artists Working in New York City.** *R. Jensen.*

W51 **Art and Architecture of Spain.** *H. Luttikhuizen.*

W52 **Watercolor.** *C. Overvoorde.*

W53 **Explorations with Porcelain.** *C. Huisman.*

# ASTRONOMY

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

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

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

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

**201 Contemporary Astronomy.** F; alternate years, core. An introduction to modern astronomy and astrophysics for students concentrating in the area of science and math-

ematics. Major topics include the nature of stars and galaxies, the physical processes occurring in various celestial objects, and the current cosmological theories. Lectures, laboratory exercises, and observing projects. Prerequisites: Mathematics 161 and one course in college physics other than 110 or 111. Not offered 1994-95.

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

## JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

# BIOCHEMISTRY

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See the Department of Chemistry, pp. 116-121, for a description of the biochemistry major and specific biochemistry courses.

# BIOLOGY

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

Associate Professor A. Koop\*

Assistant Professor C. Blankespoor

Instructor K. Grasman

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

Students interested in a biology program of concentration with a particular em-

phasis should consult with appropriate advisors. A partial listing of staff interest areas includes: Mr. Beebe—plant molecular biology, plant development, and plant physiology; Mr. Blankespoor—invertebrate zoology, ecology, parasitology; Mr. Bouma—animal cell and molecular biology, human genetics, and medical ethics; Mr. Bratt—entomology, animal diversity, marine biology, and environmental biology; Mr. De Heer—animal cell and molecular biology, and immunology; Mr. Grasman—ecology, animal toxicology; Ms. Klooster—microbiology, microbial genetics, and animal nutrition; Mr. Nyhof—animal physiology and pharmacology; Mr. Stegink—plant physiology and science education; Mr. Koop—genetics, molecular genetics, and animal development; Mr. Tigchelaar—animal anatomy and neuro-anatomy and physiology; Mr. Van Dragt—animal ecology, animal behavior, and evolutionary biology; Mr. Zylstra—cell biology and electron microscopy, environmental ethics, and philosophy of biology. Consult pages 84-94 for professional and preprofessional programs related to biology.

Prerequisite to a program of concentration in biology is a minimum average of C (2.0) in 131, 232, and 233 or approved equivalent courses.

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

Required cognates include either one year of physics (221–222 or 126 and 225) or one year of mathematics (143, 132 or 161–162), and two years of chemistry or one year of chemistry and one year of geology. Typically a student takes Chemistry 103–104, 261–262 (or 105, 261–262, 323/383) or Chemistry 113–114 and Geology 151 and 152 or 313. Chemistry courses should be completed by the end of the second year of the program. Computer science is recommended. These cognates are minimum requirements. Students planning to do graduate work in cell and molecular biology are advised to complete both the physics and mathematics cognates and organic chemistry. Those planning careers in environmental biology should include the geology cognate and a course in statistics. Other environmental courses in biology, geology, and natural resources which are offered at the AuSable Institute of Environmental Studies in Mancelona, Michigan, are described in the Off-Campus Programs section, page 189.

The Biology Department Honors Program requires that in satisfying the college honors program the student must complete three courses in biology with honors and submit an honors thesis. One of these courses will normally be the honors section of Biology 131 or 232. The second honors course will be taken from those courses numbered 300–349 the details of which will be worked out by the student and instructor at the time the student registers for the course. The third course requirement is the completion of an independent research project Biology 390 with honors. Normally this will be an investigative research project written in the form of a scientific research paper.

Prospective secondary teachers should complete Biology 357 as part of the normal program of concentration. Programs of concentration should be prepared on the basis of current guidelines established by the National Science Teachers Association. The

NSTA guidelines recommend study in zoology, botany, physiology, genetics, ecology, microbiology, cell biology/biochemistry and evolution. A minor in physical science is recommended and may be constituted of the cognates plus Geology 313.

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

Directed teaching in biology is available only during the spring semester. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department. The advisor for biology teaching major and minor programs is Mr. Steven Stegink. The elementary teacher education minor is 131, 232, 233, 234, and two biology electives one of which may be an advisor-approved interim course. Cognates to the elementary education biology minor are Physics 111 or 212 and one additional approved course from Geology, Chemistry, or Physics (typically CHEM 113 or 104 prerequisite for BIOL 234). No exemptions based upon high school work may be applied to satisfy these cognates.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs, such as medical technology and physical therapy. These majors, however, are not appropriate for students planning to attend medical school or graduate school in biology. Group majors require a minimum of twelve courses in natural science and mathematics, ten of which must be from two disciplines with no fewer than four from either, with the remaining two cognates chosen from a third discipline. At least two 300-level courses in one discipline must be included in the ten-course component of this group and Biology 395/396 or equivalent is recommended. The chairs of the departments involved must approve each program.

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

### GENERAL COLLEGE COURSES

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

**114 Plant Science.** S, core. An introduction to the principles and concepts of plant science for the general college student who has an interest in agriculture. Topics include crop plant structure and function, the effects of environmental factors on growth development and reproduction, crop production, and plant propagation. Representatives of the major crop groups in world agriculture are surveyed. Lectures and laboratories. Prerequisites: none, but Mathematics 100 and Physics 110 or equivalents are recommended. Mr. J. Beebe. Not offered 1994-95.

**115 Human Biology.** F and S, core. A study of topics selected from human physiology, anatomy, development, genetics, and evolution. The topics are presented so the student learns the current concepts and parts of their historical development, develops an understanding of the nature of biological science, and relates the information to health and other disciplines. The laboratory emphasizes human anatomy, but also includes some physiology exercises. Lectures and one three-hour laboratory each week. Prerequisites: none, but Mathematics 100 and Physical Science 110 or equivalents are recommended. *Staff.*

**116 Field Biology.** F, core. The study of organisms in their natural environment. Emphasis is on concepts of ecology relevant to field biology, field and laboratory examination and identification of organisms, and the study of major ecosystems. Lectures and laboratory. Prerequisites: none, but Math-

ematics 100 and Physics 110 or equivalents are recommended. *Mr. A. Bratt.*

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

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

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

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

**311S Field Botany.** Summer only. Taxonomy and ecology of vascular plants as components of natural communities. On site examination of plants in bogs, dunes, marshes, meadows, forests, and swamps. Assigned readings, field trips, and laboratory. Offered as a summer course at Au Sable Trails Institute of Environmental Studies located near Mancelona, Michigan. Prerequisite: 114, 233, or an introductory botany course. *Mr. A. Gebben.*

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

**IDIS 210 History of Science.** *Mr. A. Leegwater.*

## PROGRAM OF CONCENTRATION COURSES Basic Courses

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

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

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

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

**290 Directed Research.** F, I, S. Half course. The student enrolling in this course will be involved in laboratory or library research on a project currently being studied by one or more staff members. Application forms are available from the department chair and admission will be determined by the chair and the staff member directing the project.

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

## Advanced Courses

*Prerequisites for all advanced courses include at least three basic courses in the program of concentration and junior or senior standing.*

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

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

**324 Molecular Biology.\* S.** A study of photosynthesis, biosynthesis of macromolecular precursors, the chemistry of the storage, transmission and expression of genetic information, biochemical dimensions of selected physiological processes, and philosophical and ethical issues related to biochemistry and molecular biology. (Also listed as Chemistry 324, Biochemistry.) Lectures and laboratory (Chemistry 383). Prerequisite: Chemistry 323. *Mr. L. Louters.*

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

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

**335 Cell Biology.\* F.** A study of the structure, function and development of eukaryotic cells from the molecular to the tissue level with emphasis on the cellular and organelle levels of organization. The laboratory will engage students in investigations of cells and tissues including microscopy, tissue culture, histology, image analysis. Lectures and laboratory. Prerequisites, Biology 233 and Chemistry 114, 253, or 261. *Mr. H. Bouma.*

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

**341 Entomology.\* F.** Study of the biology of insects with emphasis on systematics. Lectures, laboratory, and field trips. Prerequisite: 234. *Mr. A. Bratt.* Offered alternate years 1995-96.

**344 Vertebrate Biology. S.** Study of the ecology and evolution of amphibians, reptiles, birds, and mammals. Lectures and laboratory. Prerequisites: Biology 232 and 234. *Mr. R. VanDragt.* Not offered 1994-95.

**346 Plant Taxonomy.\* F.** Identification, nomenclature, and classification of vascular plants. Lectures, laboratories, and field trips. Prerequisite: 234. *Mr. D. Gebben.* Offered alternate years 1994-95.

## Investigative Courses

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

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

**353 Investigations in Cell Biology.\*** S. Laboratory studies with discussions of cellular, organelle, and molecular topics in cell biology including the techniques for preparing and observing materials for studies of structure and function. Prerequisites: 232 and 233, Chemistry 114, 253 or 261. Mr. H. Bouma, Mr. D. De Heer, Mr. U. Zylstra. Not offered 1994-95.

**354 Investigations in Behavioral Ecology.** F Laboratory and field studies of the behavioral adaptations of animals. Emphasis is placed on the design of observational and experimental studies, as well as on the collection, analysis and presentation of data. Topics include circadian rhythms, behavioral elements of homeostatic responses, orientation of movement, signals, mediating social behaviors, foraging strategy and predator-prey interactions. Students will conduct individual research projects, write a report, and make oral and poster presentations. Prerequisites: Biology 234 and permission of instructor. Mr. R. VanDragt.

**354 Investigations in the Physiology of Vascular Smooth Muscle.** S. The smooth muscle within the walls of blood vessels displays some unique functional characteristics. The functions of this vascular smooth muscle is studied in lecture-seminar format and through laboratory investigations. Students will conduct individual research projects, write a report, and make oral and poster presentations. Prerequisites: Biology 206 or 232 and permission of instructor. Mr. R. Nyhof.

**354 Investigations in Immunology and Hematology.** F Laboratory studies and discussions of the tissues, cells, and functional mechanisms of the immune and hematologic systems. Topics include immunoassays, identification and quantitation of cells and cellular products, affinity techniques for molecules and cells, and *in vitro* manipulation of the immune system. Students will conduct individual research projects, write a report, and make oral and poster presentations. Prerequisites: Biology 206 or 232 and Chemistry 114, 253, or 261 and permission of instructor. Mr. D. DeHeer.

**357 Investigations in Biology for Teachers.\*** F This course, intended for biology

majors and minors in the education program, is designed to train students in the use of the laboratory for investigating and understanding the content of biology. Typically, all students study topics in plant and animal genetics, physiology, behavior, anatomy, and ecology. Individually, students select a content area for further exploration. Students instruct each other through investigations designed to guide their discovery and understanding of biological concepts. In doing so, students model the investigative process that builds and critiques the content base of biology. Students use computers for data collection, analysis, and presentation. A final presentation of independent research in a selected content area is required. Prerequisites: 234 and permission of the instructor. Mr. S. Stegink.

**359 Seminar in Secondary Teaching of Biology.** S. A course in perspectives on, principles of, and practices in the teaching of biology on the secondary level. This course should be taken concurrently with Education 346. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in biology. Mr. S. Stegink.

#### Seminar and Research Courses

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

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

**396 Perspectives in Medical Science.\*** S, half course unit. A critical study of the historical and philosophical perspectives pertaining to the science and practice of medicine with particular emphasis on the methodology and results of medical research. Included is a study of the medical literature;

and a critical analysis of selected representative ethical issues in medicine. Prerequisite: senior status in biology program of concentration or permission of the instructor. Mr. H. Bouma.

### GRADUATE COURSES

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

### JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

W10 The Sinking Ark: Conservation Biology and Endangered Species. K. Grasman.

W50 Reef and Rainforest Biology in Belize. A. Bratt.

W51 Functional Human Neuroanatomy. P. Tigchelaar.

W52 Mammalian Histology. R. Nyhof.

W53 Electron Microscopy Techniques. U. Zylstra.

W90 Internship in Biology. Staff.

## BUSINESS

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The business administration program at Calvin College is intended to prepare students for careers in business by balancing its business courses with the college's strong liberal arts core curriculum. Preparation for a business career is provided by meeting the general degree requirements and the business concentration in the Department of Economics and Business. This program requires a minimum of fourteen courses—the equivalent of forty-nine semester hours in business, economics, and related mathematics and computer science courses. Students may choose the general business program or may select an emphasis area from among several business functions such as marketing, management or finance. A full description of business major and cognate requirements is found on pages 134-136. Any of these concentrations, along with the general graduation requirements acquaints students with the functions of the business firm and provides an understanding of the environment of business and human behavior, as well as an opportunity to develop one's personal Christian commitment and ethical sensitivity. After completion of the program students are prepared for entry-level positions in a variety of business occupations as well as for graduate study in business.

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

## CHEMISTRY

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Professors R. Blankespoor (chair), R. De Kock, A. Leegwater, L. Louters, K. Piers, W. Van Doorne\*\*

Associate Professors T. Gray, K. Carlson Muyskens, M. Muyskens

Assistant Professor M. Eshelman

Visiting Assistant Professor R. Smart

The department offers programs of concentration for students interested in continuing their studies in graduate school, for those interested in a career as a chemist or biochemist in private industry, and for those interested in teaching chemistry at the

secondary school level. The requirements of these programs are described below.

Prerequisite to a concentration in chemistry is a minimum average of C (2.0) in 104 or 105 and in one course from 201, 253, or 261.

The major program for students who do not plan to pursue graduate study in chemistry is 103–104 (or 105), 201, 261, 262, 317 or 304, 396, and two from 318, 323/383, 327/328, 329, or 330. Required cognates are Mathematics 161, 162, and a year of college physics.

For students preparing for graduate study in chemistry, the certification requirements of the American Chemical Society for professional training in chemistry may be met by completing 103–104 (or 105), 201, 261, 262, 317, 318, 329, 330, 395, 396, and two from 323/383, 325 or 327/328; Mathematics 161, 162, 261, and 231 or 255; Physics 126 and 225 or 123, 124, and 225. Students who complete Chemistry 105 may have to complete an additional 300-level Chemistry course with laboratory to meet ACS guidelines. Computer Science 141 or 151 is recommended.

The major program for biochemistry students who do not plan to pursue graduate study in biochemistry is 103–104 (or 105), 201, 261–262, 317 or 304, 323–324, 383, 396. Required cognates are Mathematics 161–162, a year of college physics, Biology 131 and two biology courses chosen from 232, 233, 321, 333, 335 and 336, one of which must be a 300-level course.

For students preparing for graduate study in biochemistry, the certification requirements of the American Chemical Society for professional training in biochemistry may be met by completing 103–104 (or 105), 201, 261–262, 317–318, 323–324, 329, 330, 383, 395, and 396. Required cognates are Mathematics 161–162; Physics 126 and 225 or 123, 124, and 225; Biology 131, 321 and a biology course chosen from 232, 233, 333, 335, and 336. Computer Science 141 or 151 is recommended.

The Secondary Education Chemistry major includes Chem 103–104; 201; either 261–262 or 253 and an approved elective; 323 and 383; either 304 or 317; 396, and an approved elective. Students may substitute 105 and another approved Chemistry elective for 103–104. Required cognates are Biol 115 or 131 (recommended); one earth-science course from Geol 151, Astr 201, and IDIS 250; a sequence in Physics from 126–225, 123–124–225, or 221–222; and Mathematics 161. The calculus-based physics sequence (126–225 or 123–124–225) is recommended.

The teaching group major in chemistry and physics consists of Chemistry 103–104 or 105–201, and 253–323/383 or 261–262; Physics 123, 124, 181, 182, 225, and 226; and two and a half courses in chemistry and/or physics which are approved by the chairs of the two departments. Recommended courses include Chemistry 201, 304 or 317, 396, Physics 280 and 382.

Students planning secondary majors or minors in chemistry should consult Mr. Ken Piers of the Chemistry Department and Mr. Steven Stegink of the Biology Department. Directed teaching in chemistry is available only during the spring semester. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the Teacher Education Program Guidebook, available in the Education Department.

The chemistry minor concentration consists of 103–104 (or 105 and an approved elective), 201, 253 or 261, 304 or 317, 396 and one from 323/383, 262, 318, 329, or an approved interim course.

The biochemistry minor consists of 103–104 (or 105–201), 253 or 261, 323–324, 383, 396, and one additional from 201, 262, 304, 317, or an approved interim course.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. See the Department of Engineering, page 147, for a description of the Chemistry-Engineering group major. These majors are normally not appropriate for students who anticipate attending graduate school or who are in teacher education programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. At least two 300-level courses in one discipline must be included in the ten-course component of this group. The chairs of the three departments involved must approve each program of this type.

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

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

The physical science core requirement may be met by 101, 103, 104, or 105.

**101 Environmental and Consumer Chemistry.** S, physical science core. A general course designed for the non-science major and the elementary education student. The course explores the role of chemistry and its resulting technologies in the environment and contemporary society. It emphasizes the nature of scientific investigation, some historical developments in chemical theory, chemical periodicity and reactivity, and our daily interaction with synthetic materials and chemicals. Laboratory. Prerequisite: Mathematics 100 or 221 or the equivalent, or passing the mathematics competency test. *Mr. M. Eshelman.*

**103 General Chemistry.** F, core. A study of the basic principles of chemistry, with emphasis on the laws of chemical combination, descriptive inorganic chemistry, thermochemistry, the gas, liquid, and solid states of matter, the periodic law, atomic structure and chemical bonding, and the physical properties of aqueous solutions. Laboratory. Prerequisite: one year of high school chemistry or permission of the department. *Mr. L. Louters, Mr. M. Muyskens, Mr. K. Piers, Mr. W. Van Doorne.*

**103R General Chemistry Recitation.** F, quarter course. A special course in the introductory concepts of chemistry that is open only to students who have not studied chem-

istry previously or who have a weak high school background in mathematics and chemistry. The course emphasizes problem solving and the understanding of basic chemistry concepts. Prerequisite: concurrent registration in Chemistry 103. *Mr. M. Muyskens, Mr. K. Piers.*

**104 General Chemistry.** S, core. A continuation of 103 with emphasis on kinetics, chemical equilibria involving gases, weak acids and bases, and slightly soluble solids, free energy changes, electrochemistry, transition metal chemistry, descriptive chemistry, and nuclear chemistry. 104 is not open to students who have completed 105. Laboratory. Prerequisite: 103 or the equivalent. *Mr. M. Eshelman, Mr. L. Louters, Ms. K. Muyskens.*

**105 Chemical Principles.** F, core. A study of the basic principles of chemistry for students who have a strong background in chemistry. This course assumes a familiarity with topics such as chemical equations, the periodic table, and naming chemical compounds, which are briefly reviewed at the beginning. The course also reviews the structure of atoms and molecules and builds on this material to introduce chemical thermodynamics, equilibrium, and kinetics. Other topics discussed include the states of matter, acid/base chemistry and electrochemistry. Laboratory. Prerequisite: one year of high school chemistry and four years of high school mathematics, or permission of the department chair. *Mr. T. Gray.*

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

**114 Introduction to Organic and Biochemistry.** S, core. A study of the fundamental

classes of organic compounds, their syntheses and reactions, followed by an introduction to several biochemical topics including carbohydrates, lipids, proteins, enzymes, and nucleic acids. Laboratory. Prerequisite: 113. *Mr. T. Gray.*

**201 Quantitative Analysis.** S. A study of the theory and practice of commonly used chemical analytical techniques. Lecture material includes: the choice of analytical method, statistics and evaluation of analytical data, theory of simple and complex equilibria; theory of acid-base, precipitation, redox, and complexation reactions; titration curves; electrochemistry and cell potentials; and photometric and chromatographic analysis. Laboratory. Prerequisite: 104 or 105. Not open to seniors except by permission. *Mr. K. Piers.*

**253 Fundamentals of Organic Chemistry.** S. A study of organic compounds, reactions, and reaction mechanisms, emphasizing their biochemical significance. Laboratory. Offered alternate years. Prerequisite: 104 or 105. *Mr. R. Smart.*

**261 Organic Chemistry.** F A detailed study of organic compounds, their synthesis and reactions, presented within the framework of modern physico-chemical theory, together with an introduction to modern methods of analysis and identification. Laboratory. Prerequisite: 104 or 105. *Mr. R. Blankespoor, Mr. A. Leegwater.*

**262 Organic Chemistry.** S. A continuation of 261. Laboratory. Prerequisite: 261. *Mr. R. Blankespoor, Mr. A. Leegwater.*

**295 Chemistry Seminar.** F and S, no credit. A seminar devoted to an exploration of topics in current chemical research in both academic and industrial laboratories. Junior and senior chemistry majors must attend each semester; freshmen and sophomores intending to major in chemistry are encouraged to attend. *Mr. A. Leegwater.*

**304 Physical Chemistry for the Biological Sciences.** F A survey of physical chemistry with emphasis on the laws of thermodynamics, physical equilibria, transport phenomena, and enzyme kinetics. Topics are treated with life science applications. A one-semester college level calculus course is recom-

mended but not required. Laboratory. Prerequisite: 104 or 105. Offered alternate years, but not in 1994-95.

**317 Physical Chemistry.** F A study of macroscopic properties of matter as described by chemical thermodynamics and kinetics. Major topics include: the laws of thermodynamics and their application to pure substances, chemical reactions, solutions, and physical and chemical equilibria, and reaction kinetics. Laboratory. Prerequisites: 104 or 105, Mathematics 162, and a college physics course. *Mr. R. DeKock.*

**318 Physical Chemistry.** S A study of the microscopic description of matter in terms of quantum mechanics and statistical mechanics. Major topics include: the structure, energy, and spectroscopy of atoms and molecules given by quantum theory, and the relationship between microscopic and macroscopic properties of matter (statistical mechanics). Laboratory includes a six-week project on a topic proposed by the instructor. Prerequisite: 317. *Mr. R. DeKock.*

**323 Biochemistry.\*** F A study of proteins, carbohydrates, lipids, enzymes, coenzymes, hormones, vitamins, metabolism, biosynthesis, and bioenergetics. Prerequisite: 253 or 262. *Mr. T. Gray.*

**324 Biochemistry.\*** S A continuation of 323. Topics covered are photosynthesis, biosynthesis of macromolecular precursors, the chemistry of the storage, transmission and expression of genetic information, biochemical dimensions of selected physiological processes, and philosophical and ethical issues related to biochemistry. Also listed as Biology 324. Prerequisites: 323, 383. *Mr. L. Louters.*

**325 Advanced Organic Chemistry.\*** S A study of selected topics in organic synthesis or physical organic chemistry. In the laboratory individual projects involving multi-step syntheses are carried out based upon procedures found in the literature. All compounds prepared are fully characterized using spectroscopic methods and other instrumental techniques. Prerequisites: 262 and 317. Offered alternate years, but not in 1994-95. *Mr. R. Blankespoor.*

**327 Topics in Physical Chemistry.\*** S, (First half). Half course. An introduction to special topics in physical chemistry. The topics will be drawn from chemical reaction dynamics, group theory, and/or physical chemistry of the solid state. Laboratory. Prerequisites: 318 (or concurrent), one semester of college physics, and Math 162. Offered alternate years. *Ms. K. Muyskens.*

**328 Computational Chemistry.\*** S, (Second half). Half course. An introduction to computational chemistry with an emphasis on molecular modeling, quantum chemistry calculations, and dynamics simulations with applications to both biological macromolecules and organic and inorganic molecules. Laboratory. Prerequisites: 318 (or concurrent) or 304, one semester of college physics, and Math 162. Offered alternate years. *Mr. R. DeKock.*

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

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

**359 Seminar in Secondary Teaching of Chemistry.** S A course in perspectives on, principles of, and practices in the teaching of Chemistry on the secondary level. This course should be taken concurrently with Education 346. The seminar provides a forum for the discussion of concerns that de-

velop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in Chemistry. *Mr. S. Stegink.*

**383 Laboratory in Biochemistry.\*** F and S, quarter course. A laboratory course designed to teach students modern biochemical separation and analytical techniques. Included in this course are the following topics: exclusion, ion-exchange, affinity, and high performance liquid chromatography, agarose gel and polyacrylamide gel electrophoresis, ultracentrifugation, ultraviolet/visible spectroscopy, enzyme kinetics, and recombinant DNA techniques. Students will be required to carry out individual projects involving the purification and analysis of a biological macromolecule from cells or tissue. Pre- or co-requisite: 323. *Mr. L. Louters.*

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

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

**396 Perspectives in Chemistry.\*** F and 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 tech-

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

#### OFF-CAMPUS OFFERING

**332 Environmental Chemistry.** Principles and analysis of chemical movement and distribution in natural environments. Sampling and analytical methods are included for water, soil, and air. Work conducted both in natural habitats and the laboratory. Prerequisites: one year of general chemistry and one semester of either biochemistry or organic chemistry. Offered in conjunction with the Au Sable Institute. See page 190.

#### GRADUATE COURSES

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

#### JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

**W25 In Living Color.** *K. Muyskens, M. Muyskens.*

**W50 What Are We Doing to the Environment?** *A. Leegwater, K. Piers.*

**W51 Computers in Chemistry.** *R. DeKock, T. Gray.*

**W53 Will I Ever Use Plastics?** *M. Eshelman.*

**W55 The Biology and Chemistry of Love-Hate Relationships of Plants.** *J. Beebe, R. Blankespoor.*

## CLASSICAL LANGUAGES

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

The department offers four programs of concentration: in Classical Civilization, in Classical Languages, in the Greek language, and in the Latin language. The program in Classical Civilization combines some study of one of the languages with a broad study of Graeco-Roman civilization and its later influence. The Classical Languages program is designed for graduate studies, the Greek language program is for 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.

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; two courses selected from History 232, 301 or 302; and two courses selected from: Art 231, Art 233, Art 235, Greek 101–102, History 201, History 302 (if not elected above), History 303, Latin 101–102, Philosophy 312, Political Science 305, Religion 341, Communication Arts and Sciences 325, Communication Arts and Sciences 320, or additional courses in the selected language. Classics 241 or 242 may substitute for the required interim.

The Classical Languages program requires fourteen courses and one interim, including six elementary or intermediate courses chosen from: Latin 101–102, 201–202, Greek 101–102, 201–202, 203–204; six intermediate or advanced courses selected from: Latin 205–206, 301–302, 303–304; Greek 201–202, 203–204, 205 or 206, 301–302 (at least one 300-level course must be taken in each language); and two culture and civilization courses selected from: Classics 211, 221, 231, or History 301. Classics 241 or 242 may substitute for the required interim. Reading competence in French and German is also recommended.

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

The Latin language program requires six courses selected from: Latin 101–102, 201–202, 205–206, 301–302, 303–304; and three additional courses selected from this group or from Classics 211, 221, 231, or History 301. At least one course must be a 300-level Latin language course.

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 requires five language courses 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 core requirement for language with one college course); those with three years, in either 202 or 205; more than three years, in 205 or 206. Students whose qualifications permit them to omit Latin 201 or 202 should consult the department chair regarding special major or minor programs. Those who have completed one year of college Latin should enroll in 201.

The core requirements in the fine arts may be met by Classics 221, 231, Greek 202, 204, 301, 302, any Latin course numbered 202 through 304, and designated interims. The "foreign culture" requirement of certain designated professional degree programs may be met by Classics 211. Classics 231, Classical Mythology, may be part of

the teaching minor in the academic study of religions. Completion of Latin 202 or Greek 202 (or their equivalents) satisfies the college language requirement.

### CLASSICS

211 W **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. This course satisfies the "foreign culture" option of certain preprofessional programs, and also meets the writing program requirement. *Mr. K. Bratt.*

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

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

241 **Vocabulary Development Through Latin and Greek Roots.** F, half course. A study of the Latin and Greek origins of English vocabulary. Students will learn to identify the Latin and Greek bases of English words and so be able to enlarge their vocabulary and to give it etymological precision. Students with a special interest in scientific vocabulary may prefer Classics 242, Biological and Medical Vocabulary from Greek and Latin. *Mr. R. Wevers.* Not offered 1994-95.

242 **Biological and Medical Vocabulary from Greek and Latin.** S, half course. A study of the basic Greek and Latin components of scientific terminology, especially intended for students in biology and the health sciences. Non-science students may prefer the course in general vocabulary, Classics 241. *Mr. R. Wevers.* Not offered 1994-95.

### GREEK

101 **Elementary Greek.** F A beginning study of classical Greek with emphasis on the essentials of grammar and basic vocabulary. *Mr. R. Wevers, Mr. G. Harris.*

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

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

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

203 **Intermediate Greek B.** F Readings in Herodotus. Special emphasis is placed on gaining reading proficiency in Greek prose, with some attention to the characteristics of Herodotus as historian in relation to Thucydides. Prerequisite: 102. *Mr. K. Bratt.* Not offered 1994-95.

204 **Intermediate Greek B.** S, core. Readings in the Attic orators and Plato's *Apology*. Attention is given to certain matters of style. The readings are viewed in relation to, and as documentation for, the history of fourth-century Athens. Prerequisite: three semesters of Greek. *Mr. R. Wevers.* Not offered 1994-95.

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. Wevers.*

301 **Plato's Major Dialogues.\*** F, core. The Greek text of a major dialogue such as the Republic or the Gorgias is studied with a view to an understanding and evaluation of Plato's social and political views. Prerequisite: four courses in Greek or permission of instructor. *Mr. G. Harris.*

302 **Greek Drama.\*** S, core. A reading of selected Greek tragedies with attention given to their poetic and dramatic qualities. Those matters of Greek culture, literary tradition, and history which help to understand the plays are noted. Assigned outside reading in other Greek plays. Prerequisite: 301. *Mr. G. Harris.* Not offered 1994-95.

## 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. Wevers.*

102 **Elementary Latin.** S. A continuation of 101. Emphasis is placed on grammar and the early reading of longer selections of authentic Latin dealing with Roman history and culture. Prerequisite: 101 or its equivalent. *Staff.*

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

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

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 lit-

erature and to serve as an introduction to the advanced genre courses. Prerequisite: 202, three years of high school Latin, or permission of the instructor. *Mr. G. Harris.*

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

301 **Latin Epistolary Literature.\*** F, core. Readings from the letters of Cicero and Pliny. The letters are read as social and political documentation for issues, movements, and conditions of the Late Republic and Early Empire and as commentaries on the careers and personalities of their authors. Prerequisite: 205 or 206. *Mr. R. Wevers.* Not offered 1994-95.

302 **Latin Philosophical Literature.\*** S, core. Texts selected from such authors as Lucretius, Cicero, Seneca, Lactantius, and St. Augustine to illustrate the Latin contribution to Western culture, particularly in ethical and social thought. Prerequisite: 205 or 206. *Mr. M. Williams.* Not offered 1994-95.

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

304 **Latin Historical Literature.\*** S, core. Intensive reading in the major Roman historians of the Late Republic and Early Empire. Emphasis is placed upon the proper interpretation of these writers as sources for our understanding of the political movements of the period. Collateral reading and reports. Prerequisite: 205 or 206. *Mr. G. Harris.* Not offered 1994-95.

## JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

Greek 101-R Review Greek. *Mr. G. Harris.*

W12 Interim in Greece and Turkey. *K. Bratt, M. Williams.*

W19 Latin and Greek Roots in English: Seventeen Days to a Bigger and Better Vocabulary. *Mr. R. Wevers.*

# COMMUNICATION ARTS AND SCIENCES

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Professors R. Bytwerk (*chair*), R. Fortner\*, D. Holquist, J. Korf\*\*\*, T. Ozinga,

Q. Schultze, P. VandenBerg†

Associate Professors D. Freeberg, W. Romanowski

Assistant Professors L. Krähenbühl, J. VanderWoude

The department serves students intending careers in communication-related professions, but also those who wish to better understand the society in which they live and who wish to improve their ability to communicate. The department offers specializations in film studies, rhetoric and communication, telecommunications, and theatre. The department also offers a group major in business and communication, and participates in a joint program in communication disorders with Michigan State University.

Prerequisite to admission to any of the department's specializations is 140 and one other CAS course, and a minimum average of C (2.0) in all department courses completed. CAS majors may not use 100 to meet the core requirement in oral rhetoric, nor may they count 100 or 101 toward their major requirements.

The **Film Studies** specialization requires CAS 140, 230, 251, 281, 324, 352, 381, 399 and two film-related courses in CAS or other departments (including interims). Approved 1995 Interims are English W13, and Geology W10. Calvin participates in the Los Angeles Film Studies Center of the Christian College Coalition, in which students study for a semester in Hollywood. A brochure on the center is available at the CAS office. See the full description on page 186. Courses taken there can substitute (with department permission) for CAS 352 and the two elective courses in the film studies specialization. Recommended cognates include Art 350–352 and 360–62.

The **Rhetoric and Communication** specialization requires 140, 200, 305, 325, 352, 399; 203 or 218; one course selected from 240, 260, or 280; and two elective CAS courses, one of which may be an interim. Recommended cognates include English 329 and Philosophy 378.

The **Telecommunications** specialization requires 140, 230, 248 or 249, 250, 324, 352, 399 and three other CAS courses, one of which may be an interim. Recommended cognates include Art 350, 351, and 352 and English 260 and 360.

The **Theatre** specialization requires 140, 203, 217, 218, 316 or 319, 320, 321, 399 and two other courses in CAS, one of which may be an interim. Participation in the dramatic productions sponsored by the department is encouraged. Recommended cognates include art history, Philosophy 208, and English 303 and 316.

The **Business and Communication Group Major** requires CAS 200 or 240, 305, 352, and two other courses ordinarily selected from 140, 230, 240, 253, 280, 285, or 330, Business 203, 260, 380, 365 or 381, Economics 221 and 222, and one other course in business or economics. The courses chosen must form a coordinated program approved by the student's advisor. Students may be advised by a faculty member in either department. Students who take Economics 151 instead of 221–222 must take one additional economics course from Economics 323–326. Required cognates are Math 143 and, if CAS 200 is not included in the major, CAS 100.

The joint program in **Communication Disorders** is offered with Michigan State

University. Students spend three years at Calvin, then transfer to MSU for their final year. They return to Calvin for graduation and are awarded a Calvin B.S. degree. Students should take 100 or 214, 140, 203, 215, 216, 308, 309, and an approved interim. The full requirements for a Bachelor of Science in Communication Disorders are given on page 89.

Students with a G.P.A. of 2.50 and above are encouraged to do an internship, either locally or with the Chicago Metropolitan Program (see page 192) or the American Studies Program in Washington, D.C. (see page 189). The department's internship adviser is Thomas Ozinga.

A CAS minor requires the following courses: 140, 200, 203 or 217, 230 or 254, and two elective CAS courses.

The group minor in journalism, a program involving the department, is described under the Department of English, page 152.

The core requirement in oral rhetoric may be met by 100 (except for CAS majors), 101, 200, 214 or, for students in the Social Work and Recreation programs only, 240. The department also offers an exemption examination for CAS 100.

Fine arts core requirements may be met by 140, 203, 217, 254, 320 and 321.

NOTE: Students who began their studies under previous catalogs may choose to meet either those requirements or the current ones. The department will ensure that no present student's program is inconvenienced by these changes. Students who began their studies before 1992 may also use CAS 240 to meet the oral rhetoric core requirement.

**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 emphasis is on the composition and delivery of speeches. Does not meet core for CAS majors. Students in elementary teacher education programs should take 214. *Staff.*

**101 Oral Rhetoric.** F and S, core. Guided practice in developing effective public speaking, with emphasis on sound content, clear organization, appropriate word choice, and pleasing delivery, as well as evaluating the speeches of others. Not open to students who have taken 100. *Mr. T. Ozinga.*

**140 Communication and Culture.** F and S, core. The ways in which communication is used to create, maintain, and change culture. Topics include the concept of culture, the relations between culture and society, the role of ritual and drama in public life, the importance of rhetoric and conversation, the uses of myths and symbols, and the significance of narrative. The course also introduces students to the mass media as vehicles of artistic expression, entertainment and enlightenment. *Mr. W. Romanowski.*

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

**203 Interpretive Reading.** F and S, core. A study of the principles and techniques of interpretation. An analysis of prose and poetry through oral performance. *Mr. D. Holquist.*

**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 prospective coaches. *Mr. L. Vander Meer.*

**214 Creating Communication Arts in the Classroom.** F and S, core. Designed to familiarize the prospective teacher with the communication arts used in the elementary classroom and to increase competence in oral communication. Student presentations. *Mr. R. Buursma, Mr. D. Holquist.*

**215 Introduction to Communication Disorders.** F A study of the child's speech de-

velopment 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 also introduces the students to the profession of speech pathology and audiology. *Ms. J. Vander Woude.*

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. *Ms. J. Vander Woude.*

217 **An Introduction to the Theatre.** F and S, core. An introduction to the study of theatre. Lectures focus on forms, genres, performance space, and the artistic principles of production. Selected readings, discussions, attendance at plays, and critiques of performances are required. *Ms. D. Freeberg, Mr. L. Krähenbühl.*

218 **Principles of Acting.** S. An introduction to the art of acting. Through readings, discussions, and numerous in-class exercises the students will become acquainted with major acting theories. The course is for students interested in theatre-related professions as well as for students wishing to deepen their understanding of theatre and dramatic literature. Prerequisite: 217, or permission of the instructor. *Mr. L. Krähenbühl.*

220 **Calvin Theatre Company (Thespians).** F and S, quarter course. Membership in the class is limited and is determined annually by audition/interview. 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 credits may be applied to the minimum requirements for graduation, and no more than one to the major. *Ms. D. Freeberg.*

230 **The Media and the Public.** S. The roles of the mass media in society and culture. The course emphasizes the changes occurring in the means of communication, the control of media systems, the audiences for media products, and the changes introduced into American life by the press, telegraph, tele-

phone, photograph, cinema, wireless, radio, television, satellites, and computers. *Mr. R. Fortner.*

240 **Group Communication.** F. Small group communication theory and practice. Students participate in group projects leading to class presentations. Topics include leadership, discussion, roles, consensus, organization, decision-making, leadership, and persuasion. Standards for ethical conduct are considered throughout the course. *Mr. T. Ozinga.*

248 W **Writing for the Media.** F. An introduction to the content, styles, and formats of media scripts. The course emphasizes the differences in media writing compared with more familiar forms of writing, the role of the script as text in producing media programs, the styles of writing used (journalistic, dramatic, polemical, emotive), and the technical requirements for scripts used to focus the work of directors, actors, camera and sound technicians, editors and mixers in creating a media product. For fall 1994, the emphasis is on public relations and advertising. Prerequisite: English 100. *Mr. Q. Schultze.*

249 **Media Aesthetics.** S. An introduction to the aesthetic principles that govern the production of media programs, focusing on sound. Students produce a variety of short audio programs in lab situations. The course also introduces students to the process by which media programs are produced, the aesthetic and ethical challenges that this process demands, and how Christians working in the media should respond to such demands. *Mr. R. Fortner.* Not offered 1994-95.

250 **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. *Mr. J. Korf.*

251 **Introduction to Cinema.** S. A study of the development and structure of cinema as an art form and as a cultural medium. The

course aims to develop the students' understanding of cinematic language and to guide them in assessing films and film values. Course work includes readings in film history and criticism as well as the viewing and analysis of movies. Cross-listed with English 251. *Mr. R. Anker.*

**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. Cross-listed with Sociology 253. *Mr. D. Wilson.*

**254 Television Criticism.\*** S, core. The study of various important cultural and artistic forms in television drama. One section of the course is a critical study of selected examples of the finest drama produced for public and commercial television in Britain and the United States. Students use traditional and contemporary criteria to interpret, examine, and evaluate programs. The other section of the course is an examination from a Christian perspective of the dominant myths and themes in popular drama, including soap operas, detective shows, westerns, situation comedies, and adventure series. Topics include: the relationship between program content and social values, the impact of television on children and the family, and television's treatment of God and religion. *Mr. Q. Schultze.*

**260 Interpersonal Communication.** S. The interpersonal communication opportunities and problems faced by Christians as they seek to live the life of faith in contemporary society. The course focuses on the theories and the practice of interpersonal communication. Topics include the elements of dyadic communication, shyness, gender, conflict management and relational enrichment. *Mr. D. Holquist.*

**280 Organizational Communication.** F. The theory and practice of effective communication within organizations, including his-

torical perspectives, presentational skills in the interpersonal, group and organization-wide areas, and applications for management, including such topics as power, persuasion and negotiation. *Mr. T. Ozinga.* Not offered 1994-95.

**281 American Film.** F. A historical study of American film as an art form, technology, industry, and cultural medium from the silent era to the present. The films considered represent major expressions of the classical Hollywood style and diversions from the style. Topics include film technique, narrative conventions and genres, the Hollywood studio and star systems, directors, and ideologies. *Mr. W. Romanowski.*

**285 Advertising and Public Relations.** F. How and why organizations use advertising and public relations to influence various publics. The course emphasizes the historical development of advertising and public relations as well as current issues in these industries. *Mr. T. Ozinga.*

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

**308 Basic Audiology and Audiometry.** S, alternate years. A study of the fundamental aspects of hearing: the physics of sound, the anatomy of the ear, the nature of hearing and hearing impairment, and the testing of hearing. Prerequisite: permission of instructor. *Ms. J. Vander Woude.*

**309 Evaluation Procedures in Speech-Language Pathology.** S, alternate years. The diagnostic process in the analysis of speech-language communication disorders. Students learn to select, administer and interpret standardized tests to determine the appropriate speech-language therapy. Prerequisite: 215. *Ms. J. Vander Woude.* Not offered 1994-95.

**311 Child Language Development.\*** F. An examination of early language development research in phonology, morphology, syntax,

semantics, and pragmatics. Theories of language acquisition and implications for practice are examined. Particular attention is given to the role of adults in language development and to the relationship between language development and cognitive development. Prerequisites: An introductory course in Psychology or Education or permission of the instructor. Cross listed with Education 311. *Staff*.

316 **Principles of Directing.** S, alternate years. An introduction to the theory of directing. Through readings, play attendance, discussions and exercises, the students will develop a basic understanding of the directing process and an appreciation for the art of directing. This course is for students interested in theatre-related professions as well as for students wishing to deepen their understanding of theatre and dramatic structure. Prerequisites: 217 and 218, or permission of the instructor. *Mr. J. Korf*. Not offered 1994-95.

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. Cross-listed with Political Science 318. *Mr. C. Smidt*.

319 **Design for Theatre.** F, alternate years. A study of the theories and principles of theatre design. This course builds on the principles taught in 217 and includes lectures, demonstrations, reading of plays, and the development of competence in set, light, costumes, make-up, property, and publicity design. Prerequisites: 217 and permission of the instructor. *Mr. D. Leugs*.

320 **History of Theatre and Drama I.\*** F, core. A historical and analytical study of theatre and drama from its origins to the nineteenth century. *Mr. L. Krähenbühl*.

321 **History of Theatre and Drama II.\*** S, core. A continuation of 320. A historical and analytical study of theatre and drama from the nineteenth century to the present. *Mr. L. Krähenbühl*.

324 **Mass Communication Theory.\*** S. An examination of attempts to explain the role of mass communication in modern society, emphasizing European, Latin American and North American theoretical perspectives. *Mr. R. Fortner*.

325 **Rhetorical and Communication Theory.\*** S. Ways of understanding human communication from antiquity to the present, including classical and modern theories of rhetoric, interpersonal communication, language, and the role of communication in establishing social reality. *Mr. S. Robbins*.

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

346 **Internship in Communication.** F and S. Students work in profit or non-profit communication under the supervision of a professional. Typical placements include public relations or advertising agencies, broadcast or cable stations, video production companies and the like. A journal and seminar participation are required. Grading is based on the professional's evaluation, the student's daily journal, and seminar participation. Prerequisites: junior or senior status and permission of the department. *Mr. T. Ozinga*.

352 **Communication Ethics.\*** F and S. The moral and ethical dimensions of human communication with special reference to mass communication. Comparisons are made of the major standards of conduct used to make judgments about appropriate communication behavior. Public vs. private communication dilemmas are discussed. Various kinds of lies and rationalizations are analyzed. Responsibilities in interpersonal and mass communication practice are discussed in the context of case studies. *Mr. Q. Schultze*.

381 **Critical Approaches to Film.\*** S. An examination of the diverse ways in which

films are studied and criticized. This course is designed to acquaint students with the major theoretical, ethical, and critical issues surrounding the study of film by examining traditional film theories, contemporary theories based on Marxism, semiotics, structuralism and feminism, and the various schools of film criticism (e.g., auteur, genre, humanist, religious). Prerequisite: 251, 281, or permission of the instructor. *Mr. W. Romanowski.*

**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 instructor. *Staff.*

**395 Seminar: The Frontiers of Farce.** S. Prerequisite: permission of the instructor. *Ms. D. Freeberg.*

**399 Senior Seminar.** F. The application of a Reformed world view to understanding communication and culture. This capstone course concentrates on the symbolic nature of communication and on the ways in which

symbols and symbolic understandings become legitimate within a society. It examines how the creation, distribution, and consumption of communication and symbols—from public speaking to drama and media productions—influence how people make sense of their lives, and act within the context of their societies. *Mr. Q. Schultze.*

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

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

**W11 Christian Contemporary Music: Marketing or Ministry?** *W. Romanowski, Q. Schultze.*

**W12 Making Magic: The Art of Producing.** *R. Buursma, D. Freeberg.*

**W13 Explore Service-Learning.** *T. Ozinga.*

**W14 Lighting for Stage and TV.** *D. Leugs.*

**W20 AIDS—You Can Help.** *Mr. D. Holquist.*

## COMPUTER SCIENCE

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*Professors J. Bradley, E. Fife, \*\* D. Laverell, S. Leestma, L. Nyhoff, M. Stob (Chair,  
Department of Mathematics and Computer Science)*

*Associate Professor J. Adams†*

*Assistant Professor S. Dirkse*

A major program of concentration in Computer Science consists of 151, 152, 245, 253, 392, and four courses chosen from 251, 267, 283, 335, 353, 355, 363, 367, 373, 375, 383, or an approved interim. These choices must include all the courses in an area of emphasis chosen from:

1. systems programming: 251, 373, and 375
2. theory: 251, 353, and 355
3. database systems: 251, 353, and 363
4. hardware: 251, 283, and 383
5. software engineering: 267, 363, and 367.

The program must also include 231 if the area of emphasis chosen above is management information systems and 233 otherwise. The required mathematics cognate is 161, 162, and either 243 (if the area of emphasis is management information systems) or 255 (otherwise). Mathematics 261 and Computer Science 141 are also recommended. A minimum grade of C (2.0) in a 200-level computer science course is required for admission to a program of concentration.

Students with a management information systems emphasis are also encouraged to complete a business minor. The suggested minor program is Economics 221, Eco-

nomics 222, Business 203, Business 360 and two from Business 204, Business 315, Business 325, Business 359 or Business 363.

A computer science minor consists of 151, 152, 245, 253, 392, and two additional courses selected from 251, 267, 283, 335, 353, 355, 363, 367, 373, 375, 383, or an approved interim. Engineering 304 and 325 may be substituted for 283 and 383.

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

Any major in Computer Science meets the requirements of a secondary education major. Any minor may serve as a secondary education minor. Directed teaching in computer science is available only during the Fall semester. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department. Group concentrations involving mathematics, physics, business, and other disciplines are available.

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

**121 Introduction to Business Computing.** F and S. An overview of computer information systems. This survey course introduces computer hardware, software, procedures, and systems and their applications in business. The fundamentals of computer problem solving and programming in a high level language (BASIC) are discussed and applied. *Staff.*

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

**151 Introduction to Computing with C++.** F and S. An introduction to computing as a problem-solving discipline. A primary emphasis is on programming as a methodology for problem solving, including: the precise specification of a problem, the design of its solution, the encoding of that solution, and the testing, debugging and maintenance of programs, which are written in the lan-

guage C++. A secondary emphasis is the discussion of topics from the breadth of computing to give the introductory student a complete perspective on computing as a discipline. Laboratory. Prerequisite: two years of high school algebra or permission of the instructor. *Mr. L. Nyhoff.*

**152 Introduction to Data Structures with C++.** S. A continuation of 151, using C++ classes to introduce and implement the elementary data structures including lists, stacks, queues, and trees. Advanced programming techniques such as indirection, inheritance and templates are introduced; along with an emphasis on algorithm analysis, efficiency, and good programming style. Laboratory. Prerequisite: 151 or permission of the instructor. *Mr. L. Nyhoff.*

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

**233 Programming in C.** F, half course. An introduction to the programming language C based on the student's understanding of structured programming from 151. Emphasis will be placed on the special features in

C not seen or emphasized in the student's previous programming experience. Topics covered include variables, operators, control flow, functions, storage classes, arrays, pointers, input and output, and structures. Prerequisite: 151. *Mr. E. Fife.*

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

**251 Discrete Mathematical Structures.** F Combinatorics and graph theory including general counting methods, generating functions, basic properties of graphs, and Polyá's enumeration formula. Formal languages and grammars including finite state machines, languages generated by a grammar, and regular languages and expressions. Prerequisite: 152 and Math 162. *Mr. J. Bradley.*

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

**267 Software Engineering.** S, alternate years. A survey of software engineering principles including software project management, system and requirements analysis, the design and implementation of software, software quality assurance and testing, software maintenance and the use of CASE tools. Laboratory. Prerequisite: 152. *Mr. D. Laverell.*

**283 Introduction to Digital Electronics.** F, alternate years. An introduction to digital electronics for students with little or no background in physics or electronics. Topics include: basic circuit elements and laboratory instruments, discrete circuits for digital functions, Boolean algebra for circuit design, logic circuit analysis and design, and integrated circuits. Not intended for students who have taken or plan to take Physics 280 or Engi-

neering 204 and 284. Laboratory. (Also listed as Physics 285.) Prerequisite: Mathematics 132 or 161. *Staff.*

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

**353 Data Structures and Algorithms.** S, alternate years. A systematic study of algorithms, their complexity, and their application to fundamental data structures such as graphs and trees. The limitations of algorithms are also treated. Laboratory. Prerequisite: 251. *Mr. S. Leestma.*

**355 Theory of Computation.** S, alternate years. Topics from the theory of computation including finite state concepts, formal languages and grammars, computability, computational complexity. Prerequisite: 251. *Staff.*

**363 Database Management Systems.\*** F, alternate years. An introduction to the structures necessary to implement a database management system. Topics include data models (including hierarchical, network, and relational data models), normal forms for data relations, data description languages, query facilities. An introduction to existing data base management systems is given. Laboratory. Prerequisite: 152. Not offered 1994-95.

**367 Software Engineering Project.** S, alternate years. The focus of this course is the development and implementation of a functioning software system. This includes the writing of specifications, preparation of a design, coding, testing, training users and writing documentation. Prerequisite: 267. Not offered 1994-95.

**373 Operating Systems.\*** F, alternate years. An introduction to the major concepts of operating systems. Topics covered include dynamic procedure activation, system structure, memory management, correctness, timing, and process management, including

concurrent programming constructs. Laboratory. Prerequisites: 245 and 253. Mr. S. Dirkse.

**375 Language Structures and Compiler Design.\*** S, alternate years. 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. Laboratory. Prerequisites: 245, 251 and 253. Not offered 1994-95.

**383 Introduction to Microprocessors.\*** S, alternate years. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems design, interfacing, and peripherals.

Laboratory. (Also listed as Physics 385.) Prerequisites: 283 (previously 285) or its equivalent and programming experience. Staff.

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

**392 Perspectives on Computing.** 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. Mr. J. Bradley.

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

## DUTCH

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Professors M. Bakker, Queen Juliana Chair of Dutch Language, Literature and Culture, W. Bratt (chair, Department of Germanic Languages)

Programs for students wishing to minor or major in Dutch are worked out for them individually by the departmental advisor. Prerequisite to a concentration in Dutch is a minimum average of C (2.0) in 101, 102, 201, and 202 for students without a background in the language, or in 203 and 204 for those with one. The typical six-course minor requires two additional courses. The typical ten-course major requires six additional courses. The major in Netherlandic Studies requires ten courses consisting of the following: four Dutch language courses on the first- and second-year level or equivalent; three 300-level courses in Dutch literature and culture; two courses from among Art 236 (History of Dutch Paintings), History 221 (The Netherlands), Dutch 307 and 308 (Readings in Dutch Church History), and one approved interim course such as Frisian, Afrikaans, the interim in the Netherlands, or one interim course on Dutch politics, history, sociology, art, and religion.

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

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

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

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

**203 Intermediate Dutch.** F A course intended to serve students who already have some knowledge of the Dutch language but who are deficient in the ability to comprehend and write the language. Mr. M. Bakker. Not offered 1994-95.

204 **Intermediate Dutch.** S. A continuation of 203. *Mr. M. Bakker.* Not offered 1994-95.

261 **South African Society and Literature.** F. A systematic study of the development of various ethnic groups (primarily African, Dutch and English) in South Africa with special emphasis on the contributions each has made by way of literature to the country's socio-cultural life. Taught in English. Satisfies the "foreign culture" option of certain pre-professional programs. (Also listed as IDIS261.) *Mr. M. Bakker.*

305 **Dutch Classics.\*** F core. Study and discussion of several Dutch literary texts representative of the classical and modern periods of Dutch literature. Because the literature studied is varied from year to year, the course may be repeated for credit. This course is conducted in Dutch and/or English. *Mr. M. Bakker.*

306 **Dutch Classics.\*** S, core. A continuation of 305. *Mr. M. Bakker.*

309 **Netherlandic Civilization.\*** A study conducted in the English or Dutch language of several important aspects of Netherlandic civilization: language, literature, history, religion, art, architecture, social structure, and education. Students reading in Dutch may apply this course to a Dutch concentration. *Mr. M. Bakker.* Not offered 1994-95.

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

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **Life Behind the Dykes.** *Mr. M. Bakker.*

## ECONOMICS AND BUSINESS

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*Professors D. Cook, R. Hoksbergen, K. Kuipers, G. Monsma, S. Roels (chair), K. Schaefer, R. Slager, J. Tiemstra, S. Vander Linde, P. Vande Guchte, E. Van Der Heide*  
*Associate Professors R. Karppinen, B. Porter, S. Vander Veen*  
*Assistant Professor D. Kiekover,*  
*Adjunct Professor R. Vander Weele*

The department has structured its major areas of study so that students may design programs to best prepare themselves for their chosen career fields, or to help them make those choices. It offers five majors leading to a Bachelor of Arts degree—business, economics, a group concentration in the social sciences, a group concentration in business and communication, and a group concentration involving mathematics and economics or business—as well as a program leading to a Bachelor of Science in Economics and Business/Accountancy. ~~Accountancy~~ Any of the five majors above can be integrated into the department's five-year Cooperative Education Program combining three terms of work experience with standard course requirements. The department also offers minors in business and in economics, as well as a teacher education minors in economics, and in business in cooperation with Grand Rapids Baptist College. The department also cosponsors an interdisciplinary minor on international development. (See heading "Third World Development Studies.") Prerequisite to admission to any major concentration is a minimum grade of C (2.0) in Economics 221. Students who, before deciding on a major, complete 151 can be admitted to a major with a minimum grade of B- in that course.

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

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

The B.S. in Accountancy requires Business 203, 204, 215, 301, 302, 305, 350, 260, 370, 380; three from 306, 310, 311, and 315; four courses in economics, the mathematics cognate, and the computer science cognate. Business 307 is a recommended elective; however, a minimum of eighteen course units must be taken in departments other than Economics and Business. Students wishing to meet CPA requirements should consult with an accounting faculty member.

For both the business major and the B.S. in Accountancy, the four-course requirement in economics is met by completing Economics 221, 222; one course from Economics 323–326; and one additional course from Economics 323–326, or 331–339. Students who began by taking Economics 151 may, with permission of the department, continue with two courses from the 323–326 group and one additional course from Economics 331–339. Economics 151 is not recommended for departmental majors.

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

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

The social science group major may have either a business or an economics emphasis. The business emphasis requires Business 203, 260, 380, Economics 221, 222, one course from Economics 323–343, or an approved economics interim, two additional departmental courses, four courses from one of the other social sciences and a statistics course (Math 143 or its equivalent). Students who begin with 151 must take one additional economics course from 323–326 and one other economics course from Economics 323–339. The economics emphasis requires Economics 221, 222, 323 or 324, two more from 323–345, two additional departmental courses, four courses from another social science and a statistics course (Math 143 or its equivalent). Students who take 151 must continue with both 323 and 324 and with two from 331–345. The four social science courses must be in history, political science, psychology, or sociology in a coordinated program approved by the department.

The business and communication group major requires CAS 200 or 240, 305, 352, and two other courses ordinarily selected from 140, 200, 230, 240, 253, 280, 285, or 330, Business 203, 260, 365 or 380, 381, Economics 221 and 222, and one other course in business or economics. The courses chosen must form a coordinated program approved by the student's advisor. Students may be advised by a faculty member in either department. Students who take Economics 151 instead of 221–222 must take

one additional economics course from Economics 323–326. Required cognates are Math 143 and, if CAS 200 is not included in the major, CAS 100.

The mathematics and economics or business group major may have either a business or economics emphasis. The business emphasis requires Business 203, 204, Economics 221, 222, two additional departmental courses, Mathematics 161, 162, 255, 261, 343, and 344, and the computer science cognate. The economics emphasis requires Economics 221, 222, one from 323–326, three other departmental courses, Mathematics 161, 162, 255, 261, 343, 344, and the computer science cognate. Variations should be approved by a departmental advisor.

The business minor requires Business 203, 260, Economics 221, 222, (or Economics 151 and one other business or economics course), and two 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 203 and Economics 331–345. Teacher certification in an economics minor requires Economics 221, 222 (or Economics 151 and either 323 or 324), and four courses from Business 203 and Economics 323–345, including up to two approved interims. The total hours in this sequence must meet the state minimum equivalency of 20 hours.

The minimum mathematics cognate for business and economics majors and for the Bachelor of Science in Accountancy is 143 and 132; an alternative is 161, 162, and 243. However 161, 162, 255, 261, 343, and 344 are recommended mathematics courses. Although the computer science cognate can be met by any full course in computer science, Computer Science 121 is recommended. One approved interim course may be included in any program of concentration. The core requirement in the social sciences is met by Economics 151 or, normally for students majoring or minoring in economics or business, 221. However, only one of these courses may be counted toward a departmental major or minor.

## BUSINESS

**203 Introduction to Managerial Accounting.** F After a brief introduction to the principles of financial accounting and the purpose of financial statements, the course provides an introduction to managerial accounting concepts, budgeting, incremental cost and profit analysis, breakeven analysis, responsibility reporting, and the use of financial analysis for managerial decision-making. Not open to first-year students. *Ms. B. Banks, Mr. R. Karppinen, Mr. K. Kuipers, Mr. R. Slager.*

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

**215 Accounting Process and Methods.** S, half course. A study and application of accounting processes and techniques. The operations of accounting are explored in depth enabling the accounting major to apply generally accepted accounting principles to the transactions of the accounting cycle. The course will include significant exposure to computerized accounting applications and will parallel the topics covered in Business 204. Prerequisite: 203 and at least concurrent enrollment in 204. *R. Slager.*

**260 Business Organization and Management.** F and S. A study of the principles and problems of organizing and managing the firm, with emphasis on organization goals, structure, and the effective use of human resources. Not open to first-year students. *Mr. R. Karppinen, Mr. B. Porter, Mr. P. Vande Guchte.*

**301 Intermediate Accounting I.\*** F A study of financial accounting theory and generally

accepted accounting principles as applied to the measurement and valuation of assets and liabilities. Prerequisite: 204. *Mr. 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. *Mr. D. Cook.*

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

**306 Income Tax.\*** F A study of Federal income tax law and of tax cases to provide a basis for an understanding and evaluation of that law and of the rate structure. Includes the implications of income taxation for business decisions. Emphasis on taxation of individuals with limited coverage of partnerships and corporations. Prerequisite: 203. *Mr. L. De Lange.*

**307 Advanced Taxation.\*** S. A study of Federal tax law and of tax cases as they apply to corporations, partnerships, estates, and trusts. This course will analyze and evaluate the Internal Revenue Code, the IRS Regulations, and appropriate case law as the basis for understanding the law, for utilizing the law in tax planning, and for ethically interpreting the law. Tax research will be emphasized. Prerequisite: 306. *Mr. L. De Lange.*

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

**311 Auditing.\*** S. The theory and philosophy of auditing, including an examination of the ethical and other professional standards required of the Certified Public Accountant. Prerequisite: completion of or concurrent registration in 301. *Ms. B. Banks.*

**315 Accounting Systems.\*** S. A study of accounting systems which provides information for decision-making. The course examines business structures, information needed for decision-making, internal controls in manual and computerized systems, systems development, systems controls, and ethical aspects of the computer environment. Computerized accounting applications are incorporated using accounting software and spread sheets. Prerequisites: 204 and one course in computer science. *Mr. R. Slager.*

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

**357 Business Aspects for Engineers.** F, half course. An overview of the aspects of business important to engineering. Selected topics from economics, accounting, finance, marketing, management, and business law are included. Prerequisite: 151 and junior or senior standing in the engineering program. *Mr. D. Cook.*

**359 Internship in Business.** F and S. These internships involve ten to fifteen hours of work a week under an employer-supervisor and a series of internship seminars on campus. Placements may be in businesses or in not-for-profit organizations. Each intern keeps an analytical journal, submits a final summary paper, and participates in a biweekly seminar. Prerequisites: three courses in business or economics, junior or senior standing, and permission of the internship coordinator. *Mr. P. Vande Guchte.*

**363 Production and Operations Management.\*** F A study of the management of production and operations within a business, including planning, control, and evaluation of resources, inventory, schedules, and product or service quality. Techniques for making location decisions, implementing just-in-time purchasing and production, scheduling production, and using statistical process control (SPC) are studied. Computers are used extensively as tools of analysis and

simulation. Prerequisites: 260 and Mathematics 143 or its equivalent. *Mr. B. Porter.*

**365 Human Resource Management.\*** F and S. A study of the principles and problems involved in personnel management in an organization, including recruitment, selection, training, evaluation, motivation, compensation, human resource planning, career development, and collective bargaining. Prerequisite: 260 or permission of the instructor. *Mr. R. Karppinen.*

**367 Small Business Management.\*** F. A study of the business management principles applicable to the challenges and opportunities unique to small businesses. The course emphasizes strategic analysis of management, marketing, and financial issues facing small firms. Throughout the semester student teams assist local small businesses in the preparation of business plans. Prerequisites: 203, 260, 380; senior departmental major status or permission of instructor. *Ms. D. Kiekover.*

**369 International Business.\*** F. A study of the international business environment and institutions, their impact on business operations and the development of international business strategies. Prerequisites: 203, 260, 380; Economics 221 and 222 (or 151 with the permission of the instructor). *Mr. S. Vander Veen.*

**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: 204 and Economics 151 or 221. *Mr. D. Cook.*

**371 Financial Instruments and Markets.\*** 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. Not offered 1994–95.

**380 Marketing.\*** F, S, and SS. A study of the process of planning and executing the con-

ception, pricing, promotion, and distribution of ideas, goods, and services that satisfy individual and organizational needs and objectives. Prerequisite: Economics 151 or 221. Not open to freshman students. *Mr. S. Vander Veen.*

**381 Advanced Topics in Marketing.\*** S. An advanced study of market planning, market research, and consumer behavior. Students apply knowledge gained to actual business situations by providing market consulting services to local small businesses under the auspices of the Small Business Institute. Prerequisite: 380. *Mr. S. Vander Veen.*

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

**396 Strategic Management.\*** S. An integrative study of strategic management, requiring contemporary, comprehensive case applications of concepts from economics, marketing, accounting, finance, management, and international business. Ethical aspects of strategic decision making are emphasized. Student teams study cases and present their analyses. This course is recommended for students wishing to understand the formulation and implementation of ethical strategies in diversified businesses. Prerequisites: 260, 370, 380; Economics 222 or permission of instructor. *Mr. P. Vande Guchte.*

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

## ECONOMICS

**151 Principles of Economics.** F and S, core. A study of the principles of resource allocation, income distribution, prices, production, income and employment levels, and economic growth with an emphasis on the market system. The course is planned to help students understand basic domestic and international economic problems. Not recommended for majors or minors. *Mr. R. DeVries, Mr. R. Hoksbergen, Mr. G. Monsma, Mr. E. Van Der Heide, Mr. J. Tiemstra, Mr. S. Vander Linde.*

**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; in-

cluding an evaluation of the equity and efficiency of private sector and governmental activity in a market system. *Mr. S. Brinks, Mr. G. Monsma, Mr. J. Tiemstra.*

**222 Principles of Macroeconomics.** F and S. A continuation of 221. A study and evaluation of the determination of national income, including analysis of consumer spending and saving patterns, business investment, government spending, taxation, monetary policy, unemployment, and inflation. The course includes an introduction to international trade and finance. Prerequisite: 221. *Mr. J. Tiemstra, Mr. E. Van Der Heide, Mr. S. Vander Linde.*

**241 The U.S. Health Economy.** S. An economic study of the institutions that comprise the U.S. health care system, including an examination of the development of U.S. health care institutions, public policies that have shaped them, and the economic interactions between health care providers, consumers, and insurers. Emphasis is placed on issues of resource allocation, health care access, and the changing roles of physicians, nurses, insurers, and the government. This course is recommended for students who are seeking a professional career in a health care discipline. Not open to first-year students. Not offered 1994-95.

**323 Intermediate Microeconomics.\*** F. An intermediate-level study of the microeconomic theory of a market economy, emphasizing the analysis of the behavior of firms and consumers and an evaluation of the efficiency and equity of the market system of organization of economic activity. Students may not receive credit for both this course and Economics 325. Prerequisite: 151 or 221. *Mr. R. DeVries.*

**324 Intermediate Macroeconomics.\*** S. An intermediate-level study of macroeconomic theory, including the theory of aggregate demand, the level of employment, the general level of prices, and economic growth. The course provides the tools for monitoring and understanding general economic events. Computer simulations are used to demonstrate macroeconomic dynamics. Students may not receive credit for both this course and Economics 326. Prerequisite: 151 or 222. *Mr. E. Van Der Heide.*

**325 Managerial Economics.\*** S. An intermediate-level study of microeconomic theory emphasizing applications to managerial decision-making in such areas as market and risk analysis, demand forecasting, production and cost analysis, product pricing, profit planning, and capital budgeting. Goals of firms and the use of economic theory in achieving them are examined and evaluated. Students may not receive credit for both this course and Economics 323. Prerequisites: 151 or 221, Mathematics 143, 243, or 343, and completion of or concurrent registration in Mathematics 132 or 161.

**326 Business Cycles and Forecasting.\*** F and SS. An intermediate-level study of 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. Computer simulations are used to demonstrate the application of economic theory to business planning. Students may not receive credit for both this course and Economics 324. Prerequisites: 151 or 222, and completion of or concurrent registration in Mathematics 143, 243, or 343. *Mr. S. Vander Linde.*

**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. Tiemstra.*

**332 Environmental Economics and Public Policy.\*** F, alternate years. An introduction to the theory and practice of environmental policy. The course provides a survey of the problems considered by environmental economics and an evaluation of the policies that have been developed—problems related to pollution and other forms of environmental deterioration, to the use of energy and other resources, and to related issues. Prerequisite: 151 or 221, or permission of the instructor. Not offered 1994-95.

**334 Industrial Markets and Public Control.\*** S, alternate years. A study and evaluation of business strategies in imperfectly competitive markets, including entry

barriers, pricing, product differentiation, vertical integration, and mergers. Examination of relevant public policies, such as anti-trust law and utility regulation. Prerequisite: 151 or 221. Not offered 1994-95.

**335 Labor Economics.\* F** A study of labor markets and their relationship to the economy as a whole, including labor-force participation, human-capital formation, wage theory, discrimination, unemployment, income distribution, labor unions, and related public policies. Prerequisite: 151 or 221. *Mr. G. Monsma.*

**336 Comparative Economic Systems.\* A** comparison of various forms of economic organization, such as capitalist and socialist types, and an evaluation of their performance in theory and practice. Prerequisite: 151 or 221. Not offered 1994-95.

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

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

**339 Public Finance.\* S** A study of the economic effects of government spending and taxation on resource allocation and on the distribution of income. Students analyze the economic role of government, and current policy issues and the political process regarding taxation and government spending. Prerequisite: 151 or 221. *Mr. G. Monsma.*

**343 Quantitative Economics and Econometrics.\* S** A study of mathematical and statistical tools and applications in economics and business. The course examines such mathematical tools as input-output analy-

sis, linear programming, and econometric models, and involves a significant amount of computer use. This course is recommended for students considering graduate work in either economics or business. Prerequisites: Math 143 and 132 or their equivalents. *Mr. K. Schaefer.*

**349 Internship in Economics.** F and S. These internships which will require the student to use the tools of economic analysis involve ten to fifteen hours of work a week under an employer supervisor, and a series of internship seminars on campus. Each intern keeps an analytical journal, submits a final summary paper, and participates in a biweekly seminar. Prerequisites: appropriate courses in economics, completion of the mathematics cognate requirements, junior or senior standing, and permission of the internship coordinator. *Mr. P. Vande Guchte.*

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

**395 Economics Seminar.\* S** A study of the methodology of economics, and of one or more of the significant problems in economics. Emphasis on oral and written reports and on extensive reading in current economics journals. Prerequisites: senior economics major status. *Mr. R. Hoksbergen.*

#### JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

**W10 Principles of Economics: A Developmental Approach, core.** *J. Tiemstra.*

**W50 The Manager's Toolbox.** *J. Bradley, K. Schaefer.*

**W51 Consumer Behavior: Theory and Practice.** *S. Vander Veen.*

**W52 Manufacturing—American Style.** *Mr. E. Van Der Heide.*

**W53 The Financial System: Markets, Institutions, and Money.** *K. Kuipers.*

# EDUCATION

Professors P. De Boer, T. Hoeksema,\* M. Kraker, C. Mulder, A. Post, L. Stegink (chair), G. Stronks, J. Wiersma

Associate Professors S. Timmermans, Y. Van Ee

Assistant Professor R. Sjoerdsma

The various teacher education programs are described in detail on pages 66-74. Prospective elementary and secondary teachers should initially consult the teacher education advisor of the department in which they expect to major. Students intending to enter special education should consult either Mr. Thomas Hoeksema, coordinator of special education: mentally impaired, or Ms. Myra Kraker, coordinator of special education: learning disabilities.

The elementary teacher education program requires 11-1/2 professional education course units: 301, 303, 304, 305, 309, 322, 324, 325, and 345, IDIS 213, Math 221 and 222; and Physical Education 221 and 222. The secondary teacher education program requires eight course units: 301, 303, 304, 307, 308, 346, and a departmental 359. Students in special education must also complete the elementary education requirements.

**216 Educating Exceptional Children.** F and S. An introduction to the characteristics of students with a variety of learning needs. Includes study of recent laws and court decisions, alternative educational programs, current issues, and new directions in serving exceptional children in public and private schools. Throughout, a Christian view of persons will be developed which recognizes the dignity and value of those who have labeled disabilities. *Mr. T. Hoeksema, Ms. A. Post, Mr. J. Wiersma.*

*Students seeking certification must be admitted to the teacher education program and be in good academic standing before beginning any 300-level course in the department.*

**301 Psychology of Education.** F and S, core. Orientation to the field of educational psychology. A study of the learner, the learning process, and the kinds of learning. Prerequisite: admission to the teacher education program. *Staff.*

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

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

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

301, 303, or permission of instructor. *Mr. C. Mulder.*

**306 Mental Retardation.\*** F A comprehensive study of the characteristics of persons who have an intellectual disability. Historical and contemporary perspectives on mental retardation will be explored as will common causes, definitional issues, and interventions. While special attention is given to the needs of persons with retardation as learners, the course examines the entire lifespan and functioning in a variety of settings besides the school such as the church, work place, and neighborhood. A Christian view of persons, community, and discipleship, along with the concept of normalization/social role valorization, are integrating elements in the course. Prerequisite: 216. *Mr. T. Hoeksema.*

**307 Reading in Content Areas: Secondary.\*** F and S, half course. A study of the reading process as it relates to the secondary school curriculum; an analysis of the factors which enhance or impede comprehension of content area reading materials; a presentation of reading and study skills common to all content areas; an analysis of reading and study skills required in specific content areas; a review of formal and informal tests of pupil reading levels; an introduction to interpretation of test scores for screening and determining pupil reading needs. Prerequisites: 301, 303, or permission of instructor. *Ms. A. Post, Mr. L. Stegink, Ms. G. Stronks.*

**308 Reading Strategies: Secondary.\*** F and S, half course. A study of the types and functions of reading programs in secondary schools; a presentation of the responsibilities and qualifications of secondary teachers for applying principles of reading in daily assignments; demonstrations of techniques for meeting the wide range of reading levels found in the average secondary classroom. Prerequisite: 307. *Ms. A. Post, Mr. L. Stegink, Ms. G. Stronks.*

**309 Teaching Religion Studies in the Elementary School.** F and S, half course. A study of perspectives, content, methods, and materials in teaching religion studies in the elementary school. This includes pedagogy appropriate for public and non-public schools and evaluation of methods and ma-

terials. Prerequisites: 301, 303, or permission of the instructor. *Ms. Y. Van Ee.*

**310 Diagnosis and Prescription: Mental Impairment.\*** S. A study of the foundational concepts and basic terminology needed to assess students with intellectual disability. Skill will be developed in selecting, administering, and interpreting both formal and informal, norm-referenced as well as criterion referenced and curriculum-based assessment instruments, for the purpose of developing individualized educational plans. Prerequisite: concurrent enrollment in EDUC 347. *Mr. T. Hoeksema.*

**311 Child Language Development.\*** F: An examination of early language development research in phonology, morphology, syntax, semantics, and pragmatics. Theories of language acquisition and implications for practice are examined. Particular attention is given to the role of adults in language development and to the relationship between language development and cognitive development. Prerequisites: An introductory course in Psychology or Education or permission of the instructor. (Also listed as Communication Arts and Science 311.) *Staff.*

**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. Prerequisites: 301, 303, or permission of instructor. *Ms. A. Post, Ms. G. Stronks.*

**324 Reading Problems in the Elementary Curriculum.\*** F and S, half course. A study of the various kinds of problems children encounter when learning to read; an analysis of the strengths and weaknesses of common diagnostic instruments; an introduction to testing terminology and interpretation of test results; and a presentation of approaches, techniques, and devices for differentiating instruction to fit individual needs. A field experience is included. Prerequisites: 322 and concurrent enrollment in 345, or permission of instructor. *Ms. G. Stronks, Ms. A. Post.*

**325 Reading and Language Arts in the Elementary School.\*** F and S, half course. A study of reading as a language art and its relationship to the various subjects in the elementary school. Prerequisites: 322 and concurrent enrollment in 345, or permission of instructor. *Ms. G. Stronks, Ms. A. Post.*

**330 Curriculum and Instruction: Mental Impairment.\*** F A study of the various curricula, instructional materials, and teaching methods appropriate for learners who have mental impairments. Research-based general principles of instruction are reviewed as well as specific methods for teaching domestic, vocational, community living, recreation/leisure, and functional academic skills. Strategies are learned for generating curriculum, evaluating published curricula, and for developing individualized education programs. Includes a practicum of two half-days per week in local school programs serving students with retardation. Prerequisites: 216, 301, 303, 306. *Mr. T. Hoeksema.*

**336 The Young Child in an Educational Setting.\*** A review and critique of the basic theories of child development. Observation and intensive analysis of the behavior of a particular child in a preschool setting as related to the major theories. Prerequisite: Psychology 204. *Ms. Y. Van Ee.*

**337 Curriculum Theory and Development: Early Childhood Education.\*** An evaluation of the major approaches to building a curriculum for early childhood education (up to age eight), the underlying assumptions of each approach, and the effects of each approach on the children. Prerequisites: one course in education and one in psychology. *Ms. Y. Van Ee.*

**339 Current Issues in early Childhood Education.\*** An examination of support systems for the young child, including interrelationships among care givers; issues and trends in child advocacy and public law and policy; administration and organization of early childhood programs. *Ms. Y. Van Ee.*

**344 Early Childhood Education Curriculum and Instruction: Field Experience.\*** A study of teaching methods, materials, and classroom organization as they relate to the various early childhood curricula. A field

experience in two or more early childhood settings will meet state requirements. Prerequisites: 336, 337, and 339. *Ms. Y. Van Ee.*

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

**346 Directed Teaching: Secondary.** F and S. Students participate in a full-time supervised practice-teaching experience in their major field. All students except those majoring in history, mathematics, and physical education should expect to do their student teaching during the second semester. Prerequisites: good standing in the teacher education program, appropriate recommendations, and concurrent enrollment in a departmental 359. *Staff.*

**347 Directed Teaching: Mentally Impaired.\*** S, three course units. Full-time, supervised student teaching in a school program serving students with mild or moderate levels of mental impairment. A minimum of ten weeks, including at least 315 clock hours of observation and participation, is required. Includes a biweekly seminar which engages students in critical reflection on their experience in applying theory to practice in the student teaching context. *Mr. T. Hoeksema.*

## GRADUATE COURSES

**501 Advanced Educational Psychology.** F; SS, odd years. An examination of psychoeducational theories of development from the perspective of selected theorists. Consideration is given to the application of these theories to the educational environment and the implications of these theories with regard to intellectual development. Aspects of faith and moral development are considered. *Ms. M. Kraker, Ms. G. Stronks.*

**510 History of American Education.** S; SS-1997. 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 Instruction.** S, odd years; SS-1996. This course examines the theoretical foundations of selected thinkers on instruction. It focuses on the differences among the best of secular and of Christian instructional theories, with special emphasis on the way instructional decisions are related to religious vision and the major goals of education. Prerequisites: One course in psychology or sociology of education and one course in history or philosophy of education. *Staff.*

**513 Psychology and the Teaching of Reading.** F, odd years; SS-1995. A study of the dynamics of learning to read, including research from child psychology, psycholinguistics, educational psychology, and learning theory. Readings, lectures, and analysis of reading practices and materials from the psychological point of view will be used to improve reading instruction in all grades. Prerequisites: at least one course in reading and one in psychology. *Ms. M. Kraker.*

**515 Moral Education.** The study of a number of theories of moral education, some of which stress the cognitive approach and others the affective. The theories of Kohlberg and of Raths and Simon are studied. Individual projects and construction of teaching units. *Staff.* Not offered 1994-95.

**530 Education of the Gifted.** This course focuses on several manifestations of intellectual, social, and artistic giftedness. Several aspects of the educational and guidance process are studied, such as identification of talent and giftedness, curriculum considerations, teaching methods, role models, and guidance procedures. Prerequisites: graduate standing and teaching experience. *Staff.* Not offered 1994-95.

**531 Teaching Children with Learning Problems.** An orientation to the variety of handicapping conditions which affect school-age children. This course for regular classroom teachers acquaints them with the basic information and specialized vocabulary needed for dealing with handicapping conditions in the typical classroom. It will include consideration of major issues and contemporary practices in the education of exceptional learners. *Mr. T. Hoeksema, Ms. M. Kraker.* Not offered 1994-95.

**534 The Principal as Educational Leader and Manager.** SS-1996. A study of educational leadership/management theory and practice related to effective functioning of schools and effective student learning, pre-kindergarten through grade 12. This introductory course in school administration will focus on: taking initiative to accomplish the school mission, analyzing problems, learning to organize, making quality decisions, and functioning with sensitivity. Application will be made to the principal's responsibilities in the formal school setting. Special emphasis will be given to exploring Biblical principles which are to govern Christian leaders in organizational settings. A 60 hour professional field experience is required with this course. *Mr. C. Mulder.*

**538 Staff Supervision and Development.** Summer, 1997. A study of theory and practice related to supervision and evaluation of school staff personnel, pre-kindergarten through grade 12. This course focuses on administrative supervisory practices that assist the adult learner in professional growth activities that promote student learning and school improvement. The course includes a study of: factors that promote job satisfaction, staff development models, research on teacher and school effectiveness, teacher recruitment, selection, induction, and appraisal models, and the administrator's role in securing, assisting, and evaluating teachers. Special emphasis will be given to Biblical principles which are to govern Christian leaders in their relationship to personnel in an organizational setting. Prerequisite: Education 534 or permission of instructor. *Mr. C. Mulder.*

**540 Classroom Developmental Reading.** F, odd years; SS, even years. This course is designed to acquaint students with the major theoretical orientations to reading development and instruction. The course will enable experienced elementary and secondary teachers to recognize and work with students at different levels of their reading and writing development. The course includes study of the various kinds of reading problems encountered in the classroom and their causes, the use of the most common formal and informal diagnostic tests used by classroom teachers, appropriate instructional

strategies for aiding students in their reading and writing development, and a field experience involving the diagnosis of reading problems. Prerequisite: 322 or 307-8, or the permission of the instructor. Ms. G. Stronks.

**541 The Secondary Principal as Educational Leader and Manager.** SS-1996 and every third year thereafter. A study of educational leadership/management theory and practice related to effective functioning of secondary schools and effective student learning, grades 7-12. This introductory course in secondary school administration will focus on: taking initiative to accomplish the school mission, analyzing problems, learning to organize, making quality decisions, and functioning with sensitivity. Application will be made to the principal's responsibilities in the formal secondary school setting. Special emphasis will be given to exploring Biblical principles which are to govern Christian leaders in organizational settings. A 60 hour professional field experience is required with this course. *Staff.*

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

**543 Teaching Reading Through Literature.** SS, even years. This course investigates literature-based reading as it is used in a variety of ways. It seeks to familiarize teachers, future teachers, administrators, specialized reading personnel, and other interested persons in children's literature and its use in

teaching reading. The course examines the relationship between literature-based reading and a whole language approach to teaching the language arts. Further topics include emergent literacy, word identification, vocabulary, oral reading, and comprehension of narrative and expository text as they relate to literature-based reading. The course includes an emphasis on multicultural literature and its use in developing multicultural sensitivity and appreciation. Special needs students, portfolio assessment, and the parent-student-teacher partnership conclude the course. Ms. A. Post.

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

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

**550 Theories of Learning Disabilities.** F; SS-1995. This course acquaints students with the major theoretical models of learning disabilities. Research related to general characteristics, language acquisition, academic, social development, and problem solving performance of the learning disabled is examined. Approaches to the education of the learning disabled based on the theoretical models are also studied. Current issues in the field are discussed. Federal and State special education legislation is examined. Prerequisite: 216. Ms. M. Kraker.

**551 Assessment and Diagnosis: Learning Disabilities.** S; SS-1997. A study of the ba-

sic terminology and ethical considerations involved in assessing learning disabilities. Skills are developed in the selection, administration, and interpretation of appropriate psychological and educational tests for the purpose of determining educational prescriptions. Supervised clinical experience is an integral part of this course. Prerequisite: 550. Ms. M. Kraker.

562 **School Finance.** SS-1996. A study of methods of financing public and private school systems, pre-kindergarten through grade 12. This course focuses on school finance related to: responsibilities for financing education adequately and equitably, the sources of finance, the allocation of finance, administering the school budget, and an analysis of present and future issues in financing education. Prerequisite: Education 534 or permission of instructor. *Staff.*

563 **School Law.** SS-1997. A study of statutory and judicial law pertaining to public and private school systems, pre-kindergarten through grade 12. This course focuses on school law related to: school governance, private and public education and schooling, legal guidelines and limits on socialization and religious practices, freedom of speech, providing minimally adequate programs for all students, providing a safe and orderly school, and the rights of teachers. Prerequisite: Education 534 or permission of instructor. *Staff.*

570 **Workshop in Education.** See Interdisciplinary 570.

580 **Curriculum Theory and Development.** F; SS-1995. A study of curriculum development theories and models for pre-school through grade 12. This course includes a study of issues relating to organizing curriculum; selecting effective learning resources; implementing curricular change in a school setting; analyzing curriculum and materials for scope and sequence, gender issues, multicultural considerations; and integrating faith and learning. Prerequisite: Teaching experience. *Staff.*

582 **Curriculum and Instruction: Learning Disabilities-Elementary.** F; SS-1997. Curriculum and instructional methods re-

lated to oral language, reading, writing, mathematics, problem solving, and uses of computer technology are examined. Meeting IEPC goals in classroom instruction is considered. Prerequisite: 550. Ms. M. Kraker.

583 **Curriculum and Instruction: Learning Disabilities-Secondary.** F; SS-1997. Curriculum and instructional methods for secondary education are considered. Research relative to cognitive and linguistic changes in adolescence is explored. Meeting IEPC goals and management techniques are considered. Particular emphasis is placed upon using community resources as a learning environment. A field experience is an integral part of this course. *Staff.*

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

594 **Educational Research and the Classroom.** F The purposes of this course are (1) to explore a variety of types and methods of educational research and inquiry from a Christian perspective, and (2) to design a master's degree project or action research. Emphasis is placed on identifying and designing research which is practically feasible, and provides useful information for the classroom teacher. Students engage in educational inquiry and design educational research in an area appropriate to their subject matter area or grade level interest. Prerequisite: At least two graduate-level courses. *Staff.*

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

596 **Graduate Seminar.** S. This seminar is the second course in a two-course sequence, the first being EDUC 594 in which students design action research. The seminar provides M.Ed. students a seminar setting in which to report their own curriculum and instruction classroom research and produce a written product based on that research. Students are expected to apply Christian perspectives of learning and curricular decision making to the classroom setting. Prerequisite: EDUC 594. *Staff.*

## JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

W10 *Cairo: Culture and Education.* Ms. M. Kraker.

W11 *Digging for Your Family Roots.* Ms. Oostenink.

W12 *Exploring Cooperative Learning.* Mr. C. Mulder.

W13 *Technology for the Classroom.* Mr. R. Sjoerdsma.

W50 *Comparative Education: Amsterdam.* Ms. G. Stronks.

W51 *Multicultural Influences on Education in the Southwest.* Mr. S. Timmermans.

EDUC 216 *Introduction to Exceptional Children.* Ms. A. Post.

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

EDUC 337 *Curriculum Theory and Development: Early Childhood Education.* Ms. Y. Van Ee.

## ENGINEERING

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*Professors A. Blystra, R. De Jong, R. Hoeksema (chair), L. Van Poolen*

*Assistant Professors R. Brouwer, G. Ermer, E. Nielsen, B. Post*

*Instructor S. Vander Leest\**

Calvin college offers a Bachelor of Science in Engineering degree (B.S.E.) with concentrations in civil, electrical, and mechanical engineering. The B.S.E. program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (A.B.E.T.). For details of this program see pages 81-85.

A group major in engineering and physics or geology may be appropriate for some students. The group major in engineering and geology consists of Engineering 101, 202, 205, and 305; Geology 151, 152, 201, and 212; plus four approved electives, two of which must be from engineering or geology and two approved cognates from a third department within the Science Division. At least two of the geology and / or engineering courses must be at the 300 level. The group major in engineering and physics consists of twelve courses. Ten of these must be from the engineering and physics departments, with no fewer than four from either. The remaining two cognate courses must be chosen from a third department within the Science Division. A group major in engineering and chemistry is available for those who wish to pursue chemical engineering in graduate school. The group major consists of Engineering 101, 202, 204, 205, and 284; Chemistry 103-104 or 105-201, 261, 262, 317, and 318. Cognate requirements are Mathematics 161, 162, 261, 231 and Physics 126, 186, and 225. Group majors are also available to Pre-Architecture students who wish to obtain a bachelors degree at Calvin before going on to a professional school. Group majors are not accredited by A.B.E.T.

The Engineering Department is served by an advisory council. Current members are Mr. Larry Aldrink of Stow & Davis, Mr. Ron Bos, Keebler Co., Mr. Bruce Bradshaw, Pandrol Jackson, Inc., Mr. Leonard DeRooy, P.E., of Greiner, Inc., Mr. Alvin Elders of Haworth Corporation, Mr. Tim Friend, X-Rite Inc., Mr. Paul Newhof of Newhof and Winer, Mr. Tom Newhof of Prein and Newhof (chair), Mr. Gary Post of Muskegon Construction Company, Mr. Charles Spoelhof of Eastman Kodak, Inc., and Dr. Lam-

bert Vander Kooi of Western Michigan University. Calvin College is an affiliate member of the American Society for Engineering Education (ASEE) and the Junior Engineering Technical Society (JETS). Calvin College has student chapters of ASCE and ASME.

**101 Introduction to Engineering Design and Graphical Communication.** F An introduction to the design process by means of lectures, computer work, and projects. Readings are assigned in design related areas of creative thinking and modeling. Readings, lectures, and discussions also examine the areas of technology in society, engineering ethics, engineering liability, and human factors in design. The student is introduced to computer software tools for engineering design. This includes CAD and spreadsheet software. The drawing laboratory introduces graphical techniques for spatial analysis. This includes orthographic projection, free-hand sketching, pictorial representation, sections, basic dimensioning and tolerancing. *Staff.*

**102 Engineering Communication, Analysis and Design.** S, half course. A continuation of 101 which covers graphical communication of technical data as well as fundamentals of engineering problem solving and modeling. The course makes use of spreadsheet and equation solver software. An engineering project is assigned to further enhance creative skills in design. Prerequisites: 101 or 105. *Staff.*

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

**105 Introduction to Engineering Design.** F, half course. An introduction to the design process by means of lectures, computer work, and projects. Readings are assigned

in design related areas of creative thinking and modeling. Readings, lectures, and discussions also examine the areas of technology in society, engineering ethics, engineering liability, and human factors in design. The student is introduced to computer software tools for engineering design. This includes CAD and spreadsheet software. Students who transfer college level engineering drawing credit may elect to take 105 instead of 101. *Staff.*

**202 Statics and Dynamics.** S. A study of fundamental principles of mechanics and their application to the problems of engineering. Vector algebra, forces, moments, couples, friction, virtual work, kinematics of a particle, kinematics of a rigid body, dynamics of particles and rigid bodies, impulse, momentum, work and energy are presented in two and three dimensions. Prerequisites: Physics 126, 186, and concurrent registration in Mathematics 261. *Staff.*

**204 Circuit Analysis and Electronics.** S. An introduction to the theory of electronic circuits and devices and their applications. The following topics are included: basic linear circuits including passive circuit elements and analysis of linear circuits; semiconductor devices, diodes, SCR's, Triacs, Voltage Regulators, Comparators, and Timers; and electric power and machines, include dc and synchronous ac machines. Prerequisites: Physics 225, Mathematics 261, and concurrent registration in Mathematics 231. *Staff.*

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

**284 Circuit Analysis and Electronics Laboratory.** S, quarter course. Laboratory course which uses lecture and laboratory exercises to illustrate the material covered in 204.

Measurements of voltage, current, resistance, power, transient response, resonant circuits, voltage regulators, and timer circuits will be made. Operational amplifiers and their applications, digital logic circuits, and ac and dc machines will be examined. Prerequisites: Previous or concurrent registration in 204. *Staff.*

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

**302 Engineering Electromagnetics.** S. A study of the laws and engineering applications of electric and magnetic fields in various conductive, dielectric, and magnetic materials and under various boundary conditions. Emphasis is on the analysis and design aspects of transmission lines, waveguides, antennas, high frequency solid state circuits, and optical fiber systems. Prerequisites: Mathematics 261, 231, and Physics 225. *Mr. B. Post.*

**304 Fundamentals of Digital Systems.** S. An introduction to the fundamental principles of logic design in digital systems. Topics include: Boolean algebra, analysis and synthesis of combinational and sequential networks, register transfer language, micro-operational description and applications to computer design, computer organization and assembly language programming, and asynchronous logic. The student is introduced to digital logic families, including TTL, CMOS, and ECL logic. Laboratory work will include logic design and assembly language programming. Prerequisites: 204, 284, and Computer Science 141. *Mr. R. Brouwer.*

**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. A. Blystra.*

**306 Principles of Environmental Engineering.** S. Decision-making in the selection of environmental control measures and equipment. The emphasis is on water supply and wastewater system design. Topics include the

following: water treatment systems, water quality management, wastewater treatment, solid waste management, and hazardous waste disposal. Prerequisite: junior or senior standing in the Engineering Department or approval of the instructor. *Staff.*

**307 Advanced Network Analysis.** F. Advanced techniques for the analysis of analog electrical networks. Topics include: sinusoidal steady-state power calculations (including 3-phase), mutual inductance and transformers, resonance, s-domain analysis, Laplace transforms, Fourier series and Fourier transforms. Frequency response is analyzed using transfer functions, Bode plots, and pole / zero plots. Prerequisites: 204 and Mathematics 231. *Mr. R. Brouwer.*

**311 Electronic Devices and Circuits.** F. A study of the characteristics and qualitative internal action of commonly used micro-electronic devices for discrete and integrated circuits, such as diodes, junction field-effect transistors (JFETs), metal-oxide semi-conductors FETs (MOSFETs), and bipolar junction transistors (BJTs). Application of these devices in basic amplifier circuits is explored. Laboratory exercises are used to illustrate concepts. Prerequisite: 204. *Mr. B. Post.*

**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: 202, Mathematics 231 and Physics 126,186. *Mr. R. De Jong.*

**315 Control Systems.** F. An introduction to linear feedback control theory, including transient and frequency response; stability; systems performance; control modes and compensation methods. Hydraulic, electrical, pneumatic, and inertial components and systems are investigated and employed. Prerequisite: 204 and Mathematics 231. *Mr. B. Post.*

**316 Heat Transfer.** S. The analysis of steady and unsteady conduction, of free and forced convection, and of radiation modes of heat transfer. An emphasis on two and three dimensional modelling. Laboratory experiments and design projects are used to emphasize principles and Engineering practice.

Computer analysis is utilized. Prerequisites: Mathematics 231, and Physics 126. *Mr. E. Nielsen.*

**318 Soil Mechanics and Foundation Design.** S. 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.*

**319 Introduction to the Thermal/Fluid Sciences.** F An introduction to the Engineering thermal and fluid sciences including elements of thermodynamics, fluid mechanics, and heat transfer. Concepts include the properties of fluids, first and second laws of thermodynamics; external and internal viscous and ideal flows; and conduction, convection, and radiation heat transfer. Laboratory exercises are used to illustrate concepts. Prerequisites: 202 and Mathematics 231. *Mr. L. Van Poolen.*

**320 Hydraulic Engineering.** S. Application of the basic principles of fluid mechanics to practical problems in hydraulic and hydrologic analysis. Topics include fluid statics, hydrology, groundwater flow, open channel flow, closed conduit flow, and Centrifugal Pumps. Computer techniques and laboratory exercises are used to emphasize principles. Prerequisite: 319. *Mr. R. Hoeksema.*

**321 Hydraulic Engineering Design.** F Application of principles of hydraulics and hydrology to the design of hydraulic systems and structures. Problems considered in this course will include design of pipe networks for water distribution, design of sewage collection systems, design of pumping facilities, design of groundwater remediation systems, design of flood control structures, and design of dams and reservoirs. Computer techniques will be frequently employed. Prerequisite: 320. Not offered 1994-95.

**322 Machine Design.** S. 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. Prerequisite: 305. *Mr. L. Van Poolen.*

**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. Not offered 1994-95.

**325 Digital Circuits and Systems Design** F An overview of the LSI and MSI logic functions available in common digital logic families. Electrical characteristics of combinational and sequential devices in the TTL, CMOS and ECL families. Microprocessor architecture including basic components, stacks, memory organization and devices, bus standards, port based and memory mapped I/O. Interfacing and communication techniques including parallel and serial I/O, handshaking, bus control and timing, interrupts, and data error detection and correction. Daily assignments and laboratory experiences emphasize the design of digital systems. Prerequisites: 304 and 311. *Mr. R. Brouwer.*

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

**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. A. Blystra.*

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

332 **Analog Circuits and Systems Design.** S. Feedback principles and electronic circuit theory and device theory applied to multistage transistor amplifiers. Detailed study of operational amplifier specs, nonidealities, and compensation. Introduction to filter theory and practical realizations. Power supply design: rectifier circuits, linear and switching regulators. Nonlinear circuits: comparators, multipliers, Schmitt trigger, S/H circuits, multivibrators and oscillators. Introduction to noise analysis and low noise design. Emphasis on realization of designs using commercially available ICs. Design experience emphasized in projects and the laboratory. Prerequisites: 307 and 311. *R. Brouwer.*

333 **Thermal Systems Design.** F Advanced heat transfer, thermodynamic, and fluid flow topics important for the design of thermal systems are presented. Availability (exergy) analysis and methods for the optimization of system components are given. Selection and design of fluid flow and heat transfer equipment used in energy conversion systems is emphasized. Economic evaluation is studied. There is an introduction to commercially available software to size system components, for example, heat exchangers and to analyze heat transfer design problems using the finite element method. A design project is required. Prerequisite: 316. Not offered 1994-95.

334 **Dynamics of Machinery.** S, 3/4 course. This course investigates various dynamic aspects of machinery. An in-depth study is made of mechanisms such as the four-bar linkage. Cams and gears are studied in the context of their use in machines. Vibration concerns are addressed including methods of balancing rotating machinery. Kinematics and kinetics are studied in a three-dimensional space with an emphasis on application in the area of robotics. Computer simulation of mechanisms is used to reinforce

basic concepts. Prerequisite: 202. *Ms. G. Ermer.*

339 **Senior Design Project.** F, half course. The first course in the senior design project sequence. Introduction to various computer-related design tools including spread sheet analysis, linear and non-linear optimization, and computer-aided graphics and design. Emphasis is on design team formation, project identification, and completion of a feasibility study submitted in written/graphical report form. Prerequisite: concurrent registration in the seventh semester of the model program of a particular concentration or permission of the instructor. *Staff.*

340 **Senior Design Project.** S. A study of topics related to the practice of engineering design as well as the completion of a major design project initiated in 339. Topics are the engineering enterprise, the design process, socio-economic evaluation of projects, the role of values in design, communication of the design. The focus of the course is the design prototype form where appropriate. Prerequisite: 339. *Staff.*

382 **Engineering Instrumentation Laboratory.** S, 1/4 course. Laboratory course which serves as an introduction to the characteristics and uses of transducers to measure displacement, strain, pressure, temperature, velocity, acceleration, and other physical quantities. Emphasis is on the usefulness, accuracy, and reliability of measurement systems in actual applications. Electronic signal conditioning and digital data acquisition techniques are covered. Laboratory notebook and written reports required. Prerequisites: 204 and 284. *Ms. G. Ermer.*

294 / 394 **Engineering Seminar.** F and S, no credit. A seminar devoted to an exploration of topics in engineering. Seminars will cover areas such as the practice of engineering design, non-technical issues in engineering practice, engineering graduate studies, and aspects of engineering analysis. Students will receive transcript recognition for 294 if they attend eight (8) seminars prior to their admission to the engineering program at Calvin. Engineering students will receive transcript recognition for 394 if they attend eight (8) seminars after being admitted to third year status in Calvin's engineering pro-

gram. Plant tours and technical society meetings may be substituted for seminars upon approval. 294 is not a prerequisite for 394.

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

### **JANUARY 1995 INTERIM**

*A catalog with the descriptions of all interim*

*courses is available after October 1994.*

W50 **VLSI Circuit Design.** *C. Kohl.*

W51 **Finite Element Analysis.** *R. DeJong, G. Ermer.*

W52 **Introduction to Traffic Engineering.** *M. De Vries, M. Smart.*

W53 **Power-Electronics Circuits for Industrial Design.** *B. Post.*

## **ENGLISH**

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*Professors R. Anker, H. Baron, \*\* L. Basney, W.D. Brown, E. Ericson, D. Hettinga, K. Kuiper, G. Schmidt (chair), J. H. Timmerman, W. Vande Kopple, C. Walhout, M. A. Walters, D. Ward*

*Associate Professors J. Netland, J. Vanden Bosch*

*Assistant Professors S. Felch, K. Saupe*

The department offers a major in English and majors and minors in secondary and elementary English education. Prerequisite to any of these concentrations is a minimum grade of C (2.0) in English 100. Normally, English 100 is the first course taken in the department.

The recommended program for the general English major requires one course from each of the following groupings:

1. 202, 304, 305, 306, 307;
2. 203, 308, 309;
3. 304-309, 313-316;
4. 301, 302, 329, 330, 331;
5. 303;
6. 310;
7. 311.

It also requires three additional courses, which may include any of the above-listed courses or any others offered by the department, with the exception of 100, 212, 235, 251, 260, 325, 326, 335, 336, 359, 360, and 380. Only one interim course may count towards the major. No course may fulfill more than one of the ten requirements.

The recommended program for the secondary-education English major is as follows: 202; 203; 303; 310; 311; 220, 240, 251, or 326; 329 or 330; 313, 315, 316, or 319; and 336. Ideally, students should take English 336 in the semester immediately preceding their student-teaching semester. For their student-teaching semester, students must register for both Education 346 (Directed Teaching) and English 359 (Seminar in Principles of and Practices in Secondary English Teaching). Before being considered for a student-teaching placement, however, students must pass all five sections of the English Department Screening Exam. Additional criteria for approval are found in the *Teacher Education Program Guidebook* available in the Education Department. This test is given in April, September, and October.

The six-course recommended program for the secondary-education English minor is as follows: 202; 203; 310; 311; a course in writing (235, 260, 332, or 333), in teaching writing (336), or in language (329 or 330); an elective (excluding 100 and 212).

The recommended program for the elementary-education English major is as follows: 200 or 220; 202; 203; 212, 310, or 311; 325 or 326; 329 or 330; 335; 313, 315, 316, or 319; an elective (excluding 100).

The recommended program for the elementary-education English minor is as follows: 200, 220, or 240; 202 or 303; 203; 313, 314, 315, or 316; 212, 310, or 311; 325 or 326; 335, 329, or 330.

A student may alter any of the recommended programs with the permission of an academic advisor. The advisors are Mr. Dale Brown, Mr. Kenneth Kuiper, Mr. William Vande Kopple, and Mr. James Vanden Bosch for the secondary-education programs; Mr. Henry Baron, Mr. Gary Schmidt, and Mr. Donald Hettinga for the elementary-education programs; and all professors in the department for the general-major program.

An interdisciplinary minor in journalism requires Communication Arts and Sciences 230, English 260, English 360 (or 332). In addition, the student must choose three courses from the following: Art 350, 351, 352, or 360; Communication Arts and Sciences 248W, 249, 250, 305, 346, or 352; English 332; Political Science 318; English 380; and such interim courses as Advertising and Public Relations and Visual Storytelling: The Fusion of Journalism and Graphic Design. The specific program should be designed in consultation with the advisor for this program, Mr. Donald Hettinga.

A group minor in Linguistics Minor requires English 329, 330, Communication Arts and Sciences 150, and 307. In addition, the student must choose two electives, to be selected in consultation with the advisor for this program, Mr. William Vande Kopple.

The core requirement in written rhetoric is met by 100 or by examination. The first literature core requirement is typically 200, 202, 203, 212, 220, or 240; but any course in literature (as distinguished from language, composition, and film) except 325 and 326 may fulfill this requirement. Any literature course other than those offered during the interim will satisfy additional core requirements in the fine arts.

**100 Written Rhetoric.** F and S, core. A study of written English rhetoric, including a review of grammar, extensive practice in writing expository essays, and the preparation of a research paper. *Staff.*

**200 Understanding Literature.** F and S. A study of selected literary works with an emphasis on their formal qualities and cultural significance. The course aims to enhance the student's understanding of fiction, poetry, and drama. *Staff.*

**202 Survey of English Literature I.** F and S. A survey of major works of English literature from its beginnings to the late eighteenth century. *Mr. E. Ericson, Ms. S. Felch.*

**203 Survey of English Literature II.** F and

S. A survey of major works of English literature from the late eighteenth century into the twentieth century. *Mr. J. Netland, Mr. E. Ericson, Mr. J. Vanden Bosch.*

**212 American Literary Classics.** F and S. A critical study of American masterpieces as the literary embodiment of the evolving American mind, culture, and values. At least eight American authors will be studied. The course is not open to students who have taken 310 or 311 or to English majors. *Staff.*

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

riod from Dante to Solzhenitsyn and with particular attention to significant forms and themes. *Staff*.

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

**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 1994-95.

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

**260 Basic Journalism.** F A study of the principles and techniques of journalism—especially newspaper journalism—specifically, the definition of news and the varying policies governing the selection and presentation of local, national, and international stories. Against the background of a critical appraisal of current practices, students write, edit, and evaluate news reports and feature stories. *Mr. D. Hettinga*.

**295 Studies in Literature: Cinderella Meets Anansi: Folktales from Around the World.** F A literary study of folktales from around the world. Using children's books and critical anthologies of folk and fairy tales, this course will examine what these stories say about individual cultures and about the human experience. It will focus on tales from Africa, Asia, Europe, as well as South and North America, with particular emphasis on how these tales have been retold for North American readers. *Mr. D. Hettinga*. Offered 1994-95 only.

**301 Medieval English Literature.\*** F A critical study of the literature of the Anglo-Saxon and Middle English periods, excluding Chaucer. The course will analyze the literature by examining it in its cultural and historical contexts, with an emphasis on the epic, the romance, the lyric, the drama, and the histories. *Ms. K. Saupe*.

**302 Chaucer.\*** F A study of Chaucer's *Canterbury Tales* and other selections from his work which reflect his literary genius and the major cultural phenomena of his time. Supplementary study of other works and literary movements related to the period are included. *Mr. G. Schmidt*. Not offered 1994-95.

**303 Shakespeare.\*** F and S. A study of the major works of William Shakespeare. *Mr. L. Basney, Ms. M.A. Walters*.

**304 Literature of the English Renaissance.\*** F A study of the poetry and of some prose of the sixteenth century and of the drama of the sixteenth and early seventeenth centuries exclusive of Shakespeare. *Ms. S. Felch*. Not offered 1994-95.

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

**306 Milton.\*** S. An intensive study of the poetry and prose of John Milton. *Mr. E. Ericson*. Not offered 1994-95.

**307 English Literature of the Eighteenth Century.\*** S. A study of writing and its cultural contexts, with detailed attention to the works and careers of Dryden, Swift, Addison, Pope, Johnson, and Boswell. *Mr. L. Basney*.

**308 English Literature of the Early Nineteenth Century.\*** F A study of the Romantic writers of England in both poetry and prose, with intensive critical work on Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. *Mr. J. Netland*. Not offered 1994-95.

**309 English Literature of the Middle and Later Nineteenth Century.\*** S. A study of the Victorian writers of England in both poetry and prose, with intensive critical work on Tennyson, Browning, and Arnold among the poets, and Arnold, Newman, Huxley, and Ruskin among the prose writers. *Mr. J. Netland*. Not offered 1994-95.

310 **Literature of the United States I.**\* F A survey of the literary works of the colonial and revolutionary periods. Intensive studies of the Romantic writers of the nineteenth century. *Mr. K. Kuiper, Mr. J. Timmerman.*

311 **Literature of the United States II.**\* F A study of the American realists and naturalists of the late nineteenth and early twentieth centuries, and the beginnings of modernism in poetry and fiction. *Mr. K. Kuiper, Mr. C. Walhout.*

312 **Modern Literature of the United States.** F A study of the major writers of the modern period, with emphasis on the development of modernism after World War I and on the diversity of social, regional, ethnic, and aesthetic values in American literature before 1960. *Mr. C. Walhout.*

313 **Modern British and American Poetry.**\* S. Intensive reading of selected works of major twentieth-century British and American poets before 1960. *Mr. J. H. Timmerman.*

314 **The English Novel.**\* S. A survey of the English novel from its beginnings through Conrad, with emphasis upon the art and thought of the major novelists. Special attention is paid to the development of realistic, romantic, epic, and symbolic strains in modern fiction. *Mr. D. Ward.*

315 **Modern British and American Fiction.**\* F Intensive reading of selected works of major twentieth-century British and American novelists before 1960. *Mr. W. D. Brown.*

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

319 **Recent British and American Literature.**\* S. A study of short stories, novels, drama, and poetry from the sixties to the present, with attention to the evolution of postmodern forms. *Mr. J. Timmerman*

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. *Mr. D. Hettinga, Mr. G. Schmidt.*

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

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

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. *Ms. S. Felch.*

332 **Advanced Composition.**\* S. A course in advanced expository writing. Readings in the formal essay, together with writing in such types of composition as the formal and informal essay, the opinion editorial, the informative and feature article, and the book review. Open to students who have earned at least a B (3.0) in 100. *Mr. L. Basney.*

333 **The Writing of Poems, Stories, and Plays.**\* S. A course in the principles of composition of poems, stories, and plays. Works by contemporary authors are analyzed in the light of these principles. Students will practice writing in all three forms. Prerequisite: a grade of B (3.0) in 100. *Mr. J. H. Timmerman.* Not offered 1994-95.

335 **Language, Grammar, and Writing for the Elementary Classroom.**\* F An introduction to several significant and practical aspects of the nature of language, a review of

the nature of traditional grammar, including some comparisons of traditional grammar with more recently developed grammars, and an exploration of the relationships between these grammars and composition instruction and practice. *Mr. W. Vande Kopple.*

**336 Teaching of Writing.\*** F A course in the principles, practice, and pedagogy of composition, especially as these apply to junior high and high school writing programs. Extensive reading and frequent exercises in composition, revision, and evaluation. Senior majors in teacher education programs must take this course in the fall and Education 346 and English 359 in the spring semester. *Mr. H. Baron.*

**359 Seminar in Principles of and Practices in Secondary English Teaching.** S. A course in perspectives on, principles of, and practices in the teaching of English on the secondary level. This course should be taken concurrently with Education 346: Directed Teaching. Before taking English 359, students must pass the English Department Screening Exam and complete English 336, Education 301, and Education 303. Before taking English 359, students normally also complete Education 304, Education 307, and Education 308. *Mr. W. Vande Kopple.*

**360 Investigative Reporting and Feature Journalism.** S. A course in the ethics and methods of investigative reporting and in the art of writing feature stories. The course pays particular attention to the process by which specialized information from various fields—government, science, engineering, medicine, law, religion, and business—is prepared for public comprehension. Students write, edit, and evaluate feature stories designed for weekly and monthly periodicals. English 260 is recommended but not required as a prerequisite. *Mr. W. D. Brown.*

**380 Internship in Journalism.** S. A practicum permitting students to apply theoretical, technical, and ethical principles to specific journalistic activities. Students may be placed with magazines, newspapers, publishing houses, or other businesses. Each student works ten hours per week under an agency supervisor and participates in seminars on campus. Prerequisites: junior or senior status, a 2.5 college g.p.a., an average

grade of 2.5 or higher in advanced writing courses taken (English 260, 332, 333, 360), and permission of the college internship supervisor. *Mr. D. Hettinga.*

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

**395 Seminar: Mark Twain.** S. A highly focused investigation of the career of Mark Twain with special attention to his development as a writer. Much of the course will treat the major works in the order of their composition, and from this survey of the genesis and development of the career will come topics for seminar papers. The presentation of these papers will occupy the last few weeks of the course. In addition to the paper, each seminar member will present a brief oral report on a particular work or critical piece and serve as a respondent for another member's paper. The seminar will consider Mark Twain's important place as "all our father" (Faulkner) and his value in understanding the so-called "realism" of late 19th century American Literature. *Mr. W. D. Brown.* Offered 1994-95 only. Enrollment is limited to 15 students.

## GRADUATE COURSES

**510 Literature for the Adolescent.** S. 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. *Mr. D. Hettinga, Mr. G. Schmidt.*

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

537 **Teaching of Writing in Elementary and Middle Schools.** A course in the principles and practice of writing, including the study of techniques appropriate for teaching elementary and middle school students to write well. *Staff.*

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

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

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

## JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **New England Saints.** *W. D. Brown, G. Schmidt.*

W11 **Modern Poems and Ordinary Readers.** *L. Basney.*

W13 **Finding God in the Movies: Exploring Film and Religion.** *Mr. R. Anker.*

W15 **The Second Coming of Arthur: Retelling the Arthurian Myth.** *J. Netland.*

W16 **C.S. Lewis: A Christian Mind at Work.** *Mr. S. Van Der Weele.*

W17 **Frost, Cummings, Ransom.** *C. Walhout.*

W50 **Dostoevsky.** *E. Ericson.*

W51 **Writing Short Fiction.** *J. Timmerman.*

W52 **Business Writing and Communications.** *D. Hettinga, D. Ward.*

W53 **An Introduction to ESL: Issues and Strategies.** *W. Vande Kopple, J. Vanden Bosch.*

## ENVIRONMENTAL STUDIES

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See the department of geology, geography, and environmental studies for a description of courses and programs of study in environmental studies.

# FRENCH

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Professor C.-M. Baldwin Associate Professors G. Fetzter (chair), J. Wilkins,  
Assistant Professor L. Mathews

The department offers courses of study for students interested in continuing their work on the graduate level, for those interested in careers in which foreign language plays a key role, and for those interested in teaching French at the secondary or elementary school levels. Programs in the department include major and minor concentrations in French and major and minor concentrations in secondary and elementary education. To be eligible for a major concentration in general French studies, 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. To be admitted to the Teacher Education Program, a student must have a cumulative GPA of at least 2.5 in the courses required for the major and/or minor.

The general major concentration consists of ten courses beyond 102 or 121, which must include 215, 216, and 217; two courses from 219, 220, and 221; and three from the following: 295, 311, 312, 313, 314, 315, 371, and the off-campus interim. The remaining two course requirement may be fulfilled at choice. Nine courses in French beyond 102 or 121 are required for elementary and secondary education majors. The required courses include 215, 216, 217, and 315; two courses from 219, 220, and 221; and one course from the following: 295, 311, 312, 313, 314, 371, and the off-campus interim. The remaining two course requirement may be fulfilled at choice, with the advice of departmental advisors. Incoming post-baccalaureate teacher education students may be required to take additional coursework.

The general minor program, as well as the elementary and secondary minor in French, consists of six courses beyond 102 or 122, which must include 215, 216, 217, and at least one course from 219, 220, and 221. Approved courses from study programs abroad may be applied to the program of concentration. Major and minor students are encouraged to consult the *French Department Handbook*, available from the departmental office. All students wishing to be recommended by the department for a study-abroad program must sit for a language proficiency test. In order to qualify for the elementary or secondary teaching internship, all major and minor students are expected to pass, prior to the teaching internship, a departmental oral proficiency exam and a written test in addition to the competency exam administered by the State of Michigan. A score of 2+, or a ranking of Intermediate-High on the ACTFL Proficiency Scale, constitutes the desired level of proficiency. Directed teaching in French is available only during the spring semester. Students interested in the teacher education options should consult the *Teacher Education Program Guidebook*, available from the Education Department. The advisor for this program is Mr. James Wilkins.

Cognates for all major and minor programs include courses in a second language, art (231, 232), English or American literature (202, 203, 212, 303), history (220), and philosophy (208, 378). All French department courses above 102 meet foreign language core requirements; 217, 219, 220, 311, 312, 313, 371 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. Ms. L. Mathews, Ms. B. Carvill.

102 **Elementary French.** S. Continuation of 101. Ms. L. Mathew.

121-122-123 **Introductory and Intermediate French.** F I, S. A closely integrated and intensive sequence involving two semesters and the interim for students who have completed two years of high school French but who, 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. Ms. C.-M. Baldwin, Ms. L. Mathews, Mr. J. Wilkins.

201 **Intermediate French.** F Further training in oral and written French, study of the structure of the language, and practice in speaking, listening, reading, and writing. Mr. G. Fetzter.

202 **Intermediate French.** S. Continuation of French 201. Mr. G. Fetzter.

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

216 **Advanced Grammar and Composition.** S. Systematic study of advanced grammar and composition. Prerequisite: 123, 202, or the equivalent. Mr. J. Wilkins.

315 **Advanced Stylistics and Phonetics.** F For teacher education candidates and for students who wish to increase fluency in oral and written French. Continued study of selected areas of the French language, such as grammar, pronunciation, vocabulary, stylistics, and the written dissertation. Prerequisite: 216, or the equivalent. Ms. C.-M. Baldwin.

356 **Foreign Language Education in the Elementary School.** Theory and practice of foreign language teaching in the elementary school. Study of language skill development,

second language acquisition, methodologies, curriculum and programs. Elective but required for K-12 endorsement. If elected, to be taken prior to EDUC 346 (Directed Teaching) and French 359 (Seminar in Teaching).

359 **Seminar in Principles and Practices in Secondary French Teaching.** S. A course in perspectives on, principles of, and practices in the teaching of French on the secondary level. This course should be taken concurrently with Education 349: Directed Teaching. Before taking this course, students must pass the French Department proficiency test and complete Education 301 and 303. Ms. I. Konyndyk.

## LITERATURE and CIVILIZATION

217 **Introduction to French Literature.** S. An overview of selected major writers, movements, and genres from the Middle Ages to the present. Conducted mainly in French. Prerequisites: 215 or 216. Ms. C.-M. Baldwin.

219 **Francophone Literature.** S. An introduction to representative writers and works of French expression from outside France, especially those of Africa, Canada, and the Caribbean. Conducted mainly in French. Prerequisites: 215 or 216. Mr. G. Fetzter.

220 **French Culture and Society Through Art and Literature.** F. A study of current and popular French culture and society as perceived and created through various forms of literature and media art. Conducted mainly in French. Prerequisites: 215 or 216. Mr. J. Wilkins.

221 **French for the Professions.** S. An introduction to the terminology and standard forms of oral and written communication used in selected professions in the francophone world, especially France. The course also considers the cultural and economic context of that communication. Conducted mainly in French. Prerequisites: 215 (202 with permission of instructor). Not offered 1994-95.

295 **Special Topics in French.** Not offered 1994-95.

311 **French Drama.\*** S. A study of the evolution of the theater in France, from its inception to the present. Conducted in French. Mr. J. Wilkins.

312 **French Prose I.**\* A study of major literary works of fiction and non-fiction from the Middle Ages through the French Revolution. Conducted in French. Not offered 1994-95.

313 **French Poetry.**\* A study of the history and nature of French poetry by means of extensive reading and examination of major poets with special attention to the poets of the modern period. Conducted in French. Not offered 1994-95.

314 **French Prose II.**\* A study of major literary works of fiction and non-fiction from the French Revolution to the present. Conducted in French. Not offered 1994-95.

371 W **Literary Doctrines and Problems.**\* F. A study of representative literary texts in

light of selected critical approaches which reflect contemporary theories and perspectives on literary criticism, such as marxist, structuralist, reader-response, and post-structuralist. This course is conducted mainly in French and meets the writing program requirement. Mr. G. Fetzer.

390 **Independent Study.** Staff.

### JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

W50 **La Martinique: Stage culturel et linguistique.** J. Wilkins.

FREN 122 **Intermediate French (core).** C.-M. Baldwin, L. Mathews.

## GEOLOGY, GEOGRAPHY, ENVIRONMENTAL STUDIES

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Professors H. Aay, J. Clark, D. Young (chair)  
Associate Professor R. Stearley

Programs in the department include major and minor concentrations in geology, a major and a minor in geography, a group minor in environmental studies, as well as majors and minors for teacher education programs.

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

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

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

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

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

*Teacher education programs in geology.* The geology-earth science major for teacher education consists of 151, 152, 201, 202, 212, Astronomy 110 or 201, Geography/IDIS 250, and four and one-quarter course units chosen from among Geology 301, 302, 304, 311, 313, 314, 321, 331, Environmental Studies 202, and an approved elective.

The education minor consists of 151, 152, 201, 212, Astronomy 110 or 201, and one course unit chosen from among those listed for the major. The teacher education advisor is Mr. James A. Clark.

Prospective secondary education teachers should prepare their programs of concentration in geology-earth science based on current guidelines established by the National Science Teachers Association. The NSTA guidelines recommend study in astronomy, geology, meteorology, and oceanography with additional study in the areas of physics, biology, and chemistry emphasizing the relationship to geology-earth science. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department.

*Programs in geography.* The major program of concentration consists of 100, 101 or 110, 201, 210, 220, 310, 311, and two courses from 250, 321, 351, 390, 395, and courses approved by the program advisor, Mr. Henk Aay. Mathematics 143 or Psychology 250 is a required cognate.

The minor concentration consists of 100, 101 or 110, 201, 210, 310, plus one additional course approved by the advisor.

*Teacher education programs in geography.* The minor for the elementary education program consists of 100, 101 or 110, 201, 210, 310, plus one additional course approved by the advisor.

The major for secondary education consists of 100, 101 or 110, 201, 210, 220, 310, 311, plus two additional courses. Social studies group majors may take a three-course sequence consisting of Geography 101 or 110, 210, and 310.

All those in the elementary education program must take Geography 101 or 110.

*Programs in environmental studies.* Courses in environmental studies are offered to those students interested in studying a broad range of environmental problems and issues at the local, national, and global levels. Because the study of such issues is truly interdisciplinary in scope, environmental studies courses are suitable for students from the humanities, the social sciences, and the natural sciences. They may be taken singly as electives to enrich a program of study or as a supplementary concentration to a major. The group minor consists of three required courses, Environmental Studies 201, 202, and 395; two courses chosen with the approval of the program advisor from among: Biology 114, 116, 234, 311S, 352, Chemistry 110, Environmental Studies 385, Economics 332, Geography 100, 101 or 110, 210, 250, 351, Geology 103, 151, 311, Sociology 308, or approved interim courses; and one additional elective approved by the advisor, Mr. Henk Aay. Many courses offered at Au Sable Trails Institute of Environmental Studies may also serve as electives in the program.

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

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

## ENVIRONMENTAL STUDIES

**201 Human Activities and Natural Environments.\*** F. An examination of the complex system of relationships between human activities and natural environments. The ecology of natural systems will be studied by examining the relationships among their dynamic components. Upon this framework, activities by which societies—past and present—have used, affected, and transformed their natural settings are examined. Not open to first-year students. (Also listed as Geography 201) *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 first-year students. *Staff.*

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

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

## GEOGRAPHY

**100 Earth Science.** F. An introductory study of four aspects of the earth: earth as a planet in the solar system; the structure and composition of earth's crust and interior and processes affecting earth's surface; earth's atmosphere and weather processes; and the oceans. Laboratory. (Also listed as Geology 100). *Mr. J. Clark.*

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

**110 World Regional Geography.** F. An analysis of the Earth's principal culture regions from a geographic perspective: Europe, C.I.S., Middle East, East, South and South-East Asia, Australia and New Zealand, Oceania, and South, Central, and North America. These areas will be examined in the light of several foundational geographic themes: the locational organization of physical and cultural features; society-land relationships, cultural landscapes, and patterns of spatial interaction among and within regions. *Mr. H. Aay.*

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

**210 Introduction to Cultural Geography.\*** F. An examination of the interactions between culture and nature in pre-agricultural, agricultural, and urban-industrial societies. The course explores the origins, character, content, organization, perceptions, and meanings of cultural landscapes, past and present, large and small. Prerequisite: 101 or 110. *Mr. H. Aay.*

**220 Cartography and Geographic Information Systems.\*** S. Map design and interpretation with an emphasis upon computer cartographic methods. Portrayal of spatial data and analysis of spatial statistics is considered in the context of geographic information systems (GIS), a computer method that seeks relationships along map systems, remotely sensed images and spatial databases. Prerequisite: 100, 101, or 110; or instructor's permission. *Mr. J. Clark.*

**250 Meteorology.** I, even-numbered years. Meteorology is the science that deals with the atmosphere, weather, climate, and weather forecasting. This course deals with the first three of these aspects of meteorology. Major components include: 1) consideration of the weather conditions that make up climate: temperature, solar radiation, clouds, precipitation, air pressure, and winds; 2) study of natural factors that influence weather conditions: altitude, latitude, and proximity to bodies of water and to mountains; and 3) description of climate with respect to the Earth as a whole, North America, and the Great Lakes Region. Some time is devoted to consideration of man's impact on climate through atmospheric pollution, and to the impact of climate on human civilization. Lecture, discussion, activities in observation and in weather map reading. Prerequisite: Geography 100 or high school chemistry or equivalent. (Also listed as Interdisciplinary 250). Not offered 1994-95.

**310 Urban Geography.\*** S. 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 110 or one social science course. Not offered 1994-95.

**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: 100 or Geology 151 or 103. (Also listed as Geology 311). Not offered 1994-95.

**321 Glacial Geomorphology and Climatic Change.\*** S. Study of the effects of ice sheets and colder climates of past ice ages upon the earth's surface. In this course glaciology (accumulation and flow of glaciers) and glacial geology (landforms due to glaciation) are studied, emphasizing the glacial stratigraphy of Michigan. An overview of deposits of Quaternary age throughout the world gives additional evidence for and understanding of previous ice ages. Theories of climatic change, as well as man's effect upon and response to climatic change, are also discussed. Laboratory and field trips. Prerequisite: 311. (Also listed as Geology 321). Not offered 1994-95.

**351 Introduction to Urban and Regional Planning.** F A survey of the practice of urban and regional planning including its theory, history, techniques, issues, and careers. Land use planning and zoning, housing and community development, environmental planning, recreation planning, health care systems planning, transportation planning, historic preservation and urban design, and other subfields are examined within neighborhood, downtown, suburban, regional, and Third World contexts. Prerequisite: two 200-300 level social science and/or geography courses or department approval. Not offered 1994-95.

**390 Independent Study.** F, I, S, full or half course. The independent study of a subdiscipline or topic in geography not included in the regular curriculum. Prerequisite: permission of the department. *Staff.*

**395 Research in Geography.** F, I, S, full or half course. Field or library research on an approved geographical problem and presentation of the results of this research in a seminar. Open to qualified students by permission of the department. *Staff.*

## GEOLOGY

**100 Earth Science.** F An introductory study of four aspects of the earth: earth as a planet

in the solar system; the structure and composition of earth's crust and interior and processes affecting earth's surface; earth's atmosphere and weather processes; and the oceans. Laboratory. (Also listed as Geography 100). *Mr. J. Clark.*

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

**151 Introductory Geology.** F, core. A study of the geological structure of the earth. Topics included are: minerals and rocks; formation and alteration of rocks in the earth's crust; earth's interior and surface structure; surface processes producing landforms; energy and mineral resources. Laboratory. *Mr. J. Clark, Mr. D. Young.*

**152 Historical Geology.** S, core. A study of geological structures that have existed in the past and of the changes and development that have taken place in the earth's crust. Evidences for these past structures and events are taken from present rock strata, including the fossil record. Laboratory. Prerequisites: 151, 103, or 100. *Mr. R. Stearley.*

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

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

**203 X-ray Diffraction.\*** F, half course. A study of the theoretical principles of X-ray diffraction and their application to the identity, structure, and chemical composition of minerals and other crystalline solids. Laboratory. Prerequisite: Geology 201, Chemistry 104, Engineering 205, or Physics 226. Not offered 1994-95.

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

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

**302 Sedimentology Petrology and Depositional Environments.\*** F The study of sedimentary rocks, their classification and origins. Lecture emphasizes the physical, chemical, and biologic processes responsible for the origin, deposition, and diagenesis of sediments, with particular attention to modern depositional analogs. Laboratory emphasizes identification of sedimentary rocks in outcrop, hand specimen, and thin section. Laboratory, two required field trips. Prerequisites: 152 and Chemistry 103. *Mr. R. Stearley.*

**304 Geochemistry.\*** F The origins and history of the solar system, earth, crust and mantle, and various rock types in light of the distribution of the chemical elements and of stable and radioactive isotopes. Low-temperature aqueous geochemistry is also discussed. Prerequisites: 201 or 151 plus Chemistry 104, or permission of the instructor. Not offered 1994-95.

**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, 103, or 100. (Also listed as Geography 311). Not offered 1994-95.

**313 Paleontology.\*** F A study of organisms that once lived on the Earth. Includes an examination of the processes of fossilization and methods of discovering the structure, habitat, and relationships of those organisms, and a review of their distribution and life history. A broad spectrum of organisms is studied with emphasis on invertebrate animals. Laboratory, field trip. Prerequisite: 152 or Biology 232. *Mr. R. Stearley.*

**314 Stratigraphy.\*** S. Fundamental principles of stratigraphic nomenclature and interpretation are illustrated through intensive study of stratigraphic sections from the Michigan Basin, the southwestern United States, the Central Appalachian Basin, and Precambrian settings in Ontario. Emphasis on applying the interpretation of sedimentary facies to historical sequences. Applications to petroleum exploration. Laboratory, required field trip. Prerequisites: 152 and 302. *Mr. R. Stearley.*

**316S Field Geology.** Summer only. Introductory field geology. Offered as a summer course at Au Sable Trails Institute of Environmental Studies located near Mancelona, Michigan.

**321 Glacial Geomorphology and Climatic Change.\*** S. Study of the effects of ice sheets and colder climates of past ice ages upon the earth's surface. In this course glaciology (accumulation and flow of glaciers) and glacial geology (landforms due to glaciation) are studied, emphasizing the glacial stratigraphy of Michigan. An overview of deposits of Quaternary age throughout the world gives additional evidence for and understanding of previous ice ages. Theories of climatic change, as well as man's effect upon and response to climatic change, are also discussed. Laboratory and field trips. Prerequisite: 311. (Also listed as Geography 321). Not offered 1994-95.

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

**359 Seminar in Secondary Geology-Earth Science.** S. A course in perspectives on, principles of, and practices in the teaching of Geology-Earth Science on the secondary level. This course should be taken concurrently with Education 346. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in Geology-Earth Science.

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

**395-396 Research in Geology.\*** F, I, S, full or half course. Field and / or laboratory research on an approved geological problem and presentation of the results of the research in seminar. Open to qualified students by permission of the geology staff. *Staff.*

## GRADUATE COURSES

**520 Advanced Earth Science.** This course includes consideration of the main ideas which serve as unifying principles in earth science. Recent discoveries and current research projects are reviewed. The course highlights ideas resulting from studies in earth sciences which have increased our understanding of the relationship between the earth and its human inhabitants. Topics include applications of geology to environmental problems, contributions of space research to understanding the earth, and the relationship between the results of geologi-

cal study and teachings of the Bible. Special attention is given to topics and concepts which can be incorporated into elementary, middle, and secondary school materials and activities. Prerequisite: Geology 100 or permission of the department. Staff.

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

## JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **Shark, Sonar, and Surf: A Study of the Sea.** R. Stearley, D. Young.

W50 **Quantitative Geoscience.** J. Clark.

## GERMAN

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Professors W. Bratt (chair), B. Carvill, J. Lamse

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

The typical major requires ten courses in addition to the elementary courses and must include 123, 202, or the equivalent, 215, and at least two 300-level literature courses. Six-course minors must include 215. The nine-course teacher education major must include 215, 216, and two 300-level literature courses. The elementary and secondary teacher education minors must include 215, 216, and four additional approved courses. The teacher education advisor is Ms. B. Carvill.

Students in teacher education, secondary majors and minors, and elementary minors must pass the test administered by the State of Michigan. They must also pass a German proficiency examination prior to the teaching internship. The examination is offered twice each school year, during October and March; for details see the teacher education advisor. Additional criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department.

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

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

### LANGUAGE

101 **Elementary German.** F. An introductory course in the comprehension and use of spoken and written German as well as an exposure to the cultures of the German-speaking countries. Mr. J. Lamse.

102 **Elementary German.** S. Continuation of 101. Mr. J. Lamse.

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. *Mr. J. Lamse.*

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

**202 Intermediate German.** S, core. Continuation of 201. Prerequisite: 201. *Ms. B. Carvill.*

**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. *Ms. B. Carvill.*

**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. *Ms. B. Carvill.*

**315 Advanced Grammar and Stylistics.** S. For the advanced student who wishes to increase fluency in oral and written German. Study of selected areas of the German language, such as advanced grammar, pronunciation, vocabulary, and stylistics, with practice in speaking and writing. Prerequisite: 216 or permission of the instructor. *Ms. B. Carvill.*

## LITERATURE

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

**218 Readings in Major German Authors.** S, core. Readings in major German authors from 1850 to the present. Prerequisite: 123 or 202. *Mr. W. Bratt.*

**250 German Civilization.** F, core. A study of the German spirit as it finds expression particularly in social customs and institutions, religious and political life, and the fine arts. Lectures and discussions. Prerequisite: 123 or 202. Not offered 1994-95.

**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.\*** F, even years. Readings in German and Swiss prose and poetry of the nineteenth century. A survey of the intellectual and cultural changes in this era and an analysis of some literary works characteristic of the period. Prerequisite: 217, 218, or permission of the instructor. *Mr. W. Bratt.*

**306 Literature of the German Democratic Republic.\*** F, even years. A survey of East German literature from its beginnings in the late 1940s to 1989. 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. Not offered 1994-95.

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

**308 Literature of the Federal Republic of Germany.** S, odd years. Readings in German literature from 1945 to the present from such writers as W. Borchert, Frisch, B/Adoll, and M. Walser. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Ms. B. Carvill.*

**359 Seminar in Principles and Practices in Secondary German Teaching.** S. A course in perspectives on, principles of, and practices in the teaching of German on the secondary level. This course should be taken concurrently with Education 349: Directed Teaching. Before taking this course, students

must pass the German Department language exam and complete Education 301 and 303.

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

**395 Seminar.**

### CIVILIZATION

**361 Introduction to Modern German Culture.** S. A survey of the German cultural tra-

dition of this century as it finds expression in the various arts, with particular emphasis on films and representative works of literature in translation. Open to all students, but planned primarily for those in designated preprofessional courses whose programs include the "foreign culture" option. No knowledge of German is required. Not offered 1994-95.

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

**W50 German Interim Abroad - 1995.** B. Carvill.

**Germ 122 Intermediate German.** J. Lamse.

## GREEK

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See the department of classical languages for a description of courses and programs of concentration in Greek.

## HISTORY

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*Professors R. Bolt, J. Bratt (chair), B. de Vries\*, D. Diephouse, D. Miller, F. Roberts,*

*D. Van Kley\*, E. Van Kley, W. Van Vugt, R. Wells\*\**

*Associate Professor D. Howard\*\**

*Assistant Professor R. Railsback, A. Sterk*

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

The minimum requirements for a major concentration are nine courses in history in addition to 101 or 102, or 102 Honors; including 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; at least one additional course from 310-312 or from 355, 356 and 357; and at least one course from 203-208, 231-233, 235 or 236. The American

concentration requires at least three courses from 310, 311, 312, 355, 356 and 357; at least two courses from 301–305; and at least one course from 203–208, 231–233, 235 or 236. 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 203–208, 231–233, 235–236, and 320. A secondary school minor includes 101 or 102; two from 310, 311, 312 (or 211 plus 355, 356, or 357); 360, and two others. The elementary teacher education minor is 101 or 102; 211 or 215; one course from 203–208, 231–233, 235 or 236; one course from 301–312; and an approved elective.

One upper-level interim course may be applied to a minor concentration. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department. Students seeking special advice on teacher education programs should consult Mr. Daniel Miller.

The core requirement in history must be met by one course from 101, 102, or 102 Honors; any other regular course in the department will satisfy an additional requirement in the contextual disciplines.

#### AREA SURVEYS

**101 Western Civilization.** F and S, core. A study of the antecedents of Western Civilization with emphasis on cultural currents in their global context, from the rise of civilizations in antiquity to the transformation of the West in the fifteenth century. Not open to juniors or seniors except by permission. *Staff.*

**102 Western Civilization.** F and S, core. A study of the main cultural currents of Western Civilization with primary emphasis on the period since the Reformation. Not open to juniors or seniors except by permission. *Staff.*

**102 W Honors Western Civilization.** F and S, core. An intensive study of a particular topic or a masterpiece of historical literature, such as Alexis de Tocqueville's *The Old Regime and the French Revolution* or Carl Becker's *The Heavenly City of the Eighteenth-Century Philosophers*. Not a Western Civilization survey in the traditional sense, this course is rather an attempt to communicate a capacity to understand, appreciate, and critically evaluate distinguished examples of historical scholarship. First- and second-year students with grade point averages of 3.3 or above are eligible. *Mr. D. Van Kley, Mr. W. Van Vugt.*

**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: precolonial times; culture, commerce, and state building; the trans-Saharan and Atlantic trade; Islam and the socio-political changes it brought; the Atlantic slave trade. Not offered 1994–95.

**206 History and Society in West Africa since 1800.\* F** 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. R. Jelks.*

**207 Latin America.\* F** A study of continuity and change in Latin America from Pre-Columbian times to the present. Topics covered include the melting of races and cultures in the Conquest Era, the long-term influence of colonial institutions, the paradox of economic development and continued dependency, the current struggle between forces of the Left and the Right, and the crucial role of the Roman Catholic church. *Mr. D. Miller.*

**208 National Histories of Latin America.\* S.** A detailed analysis of the history of a single Latin American nation with special attention to those characteristics that make it unique within the Latin American context. Not offered 1994-95.

**231 W Ancient Near East.\* S.** A cultural history of the ancient Near East from pre-history 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.*

**232 Hellenistic and Late Antique Near East.\* S.** A study of the transformation of Near Eastern civilization initiated by the conquests of Alexander the Great, undertaken through archaeological as well as literary evidences. Particular emphasis is placed on the cultural syncretism of the age, which saw the development of Judaism and the emergence of Christianity and Islam. Scientific, technical, artistic, social, religious and political developments will all receive attention. Not offered 1994-95.

**233 Modern Near East.\* F** A study of Near Eastern history from the eleventh century

to the twentieth century, with special emphasis on topics concerning the interaction between the Near East and the emerging West, including the Crusades, the Ottoman Empire, the "Eastern Question" in European diplomacy, colonialism, nationalism and Islamic revival. Analysis of the emergence of modern states in the Near East and their various responses to the impact of the West. Not offered 1994-95.

**235 Traditional South Asia.\* F** A cultural history of the Indian subcontinent from the earliest times to the eighteenth century. Primary emphasis will be placed on the civilization of Hindustan and the interplay of Hindu and Islamic religious and cultural forces which took place there up to the advent of European imperialism. Archaeological, literary and artistic evidence receive equal attention. *Mr. D. Howard.*

**236 Modern South Asia.\* S.** A study of the history of the Indian subcontinent from the seventeenth century to the present, with emphasis on the interaction between South Asia and the modern West. The emergence of the nations of India, Pakistan and Bangladesh is examined against the background of British occupation and colonialism. Economic, social, political, religious and intellectual themes receive consideration. Not offered 1994-95.

## NATIONAL HISTORIES

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

**212 England.\* S.** A survey of English history including the Anglo-Saxon background; the medieval intellectual, religious, and constitutional developments; the Tudor and Stuart religious and political revolutions; the emergence of Great Britain as a world power; the growth of social, economic, and political institutions in the modern period. Not offered 1994-95.

**215 Canada.\* F** A tracing of the founding and character of New France followed by a careful examination of nineteenth- and twentieth-century Canada. Not offered 1994-95.

218 **Russia.**\* F A survey of Russian history from the Middle Ages to the twentieth century. After an introductory examination of the medieval Russian principalities and the rise of Muscovy, the course will emphasize Imperial Russia from the reign of Peter the Great to the fall of the Romanov dynasty. The course concludes with the dramatic events of 1917-1923, including the revolutions of 1917, the civil war, and the establishment of the U.S.S.R. Not offered 1994-95.

220 **France.**\* S. The history of France from the religious wars of the sixteenth century to the present, with some initial attention given to the country's ancient and medieval origins. The course will emphasize the role of religion and religious conflict in the making of modern France, even during the French Revolution and its audacious experiment with "dechristianization." The centrality of the revolution of 1789 to the national identity will thereafter be underscored. The first half of the course will address the relation of politics and religion with reference to some pieces of religious literature, among them Pascal's *Thoughts*, while the second half will focus on the relation of politics and art with help from nineteenth century novels such as Flaubert's *The Sentimental Education*. Not offered 1994-95.

223 **Germany.**\* S. A survey of German history with particular attention given to the period from the Reformation to the present. Included in the course are medieval background, the Reformation and its impact on later German developments, the religious wars, intellectual developments of the eighteenth and nineteenth centuries, the movement toward political unity in the nineteenth century, World War I, the Third Reich, the Weimar Republic and postwar division and reunification. *Mr. D. Diephouse.*

### STUDIES OF HISTORICAL PERIODS

301 **Classical History.**\* 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. *Mr. B. de Vries.*

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. *Ms. A. Sterk.*

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. F. Roberts.*

304 **Early Modern Europe.**\* F A topical approach to the history of Europe from roughly 1618 to 1799, that is, from the Thirty Years' War through the French Revolution. The course will analyze the components of the "general crisis of the seventeenth century," the origins and characteristics of the eighteenth-century Enlightenment, and the intellectual and political origins of the French Revolution. The readings will be from both secondary texts and primary sources; a carefully delimited paper based on primary source material will be required. *Mr. E. Van Kley.*

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

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

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

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

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

### TOPICAL STUDIES

219 **Studies in Comparative History: Themes in British and American History.** S. The method of this course is comparative, which means that historical themes from both Britain and America will be explored in order to make more meaningful judgments about historical issues common to both nations. Taught in London, England, it will integrate experience with traditional academic study. Prerequisite: History 101 or 102. A college-level course in British or American history is desirable but not required. *Mr. R. Wells.*

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. Prerequisite: one course

in American history or permission of the instructor. *Mr. J. Bratt.*

356 **W 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 and one course in American history or permission of the instructor. *Mr. R. Wells.*

357 **Economic History of the United States.\*** S. A study of United States economic history from colonial times to the present, emphasizing the foundations of the American economy, the dynamics behind American economic expansion, the history of American business, and the costs and benefits of industrialization and modernization. Prerequisite: one course in American history or permission of the instructor. Not offered 1994-95.

359 **Seminar in the Teaching of History on the Secondary Level.** F and S. This course is designed to assist student teachers in developing appropriate goals and effective methods of teaching history at the high school and junior high level. The seminar also provides a forum for the discussion of problems that develop during student teaching. Prerequisites: concurrent enrollment in Education 349 and an approved history major, at least one course of which must be taken at Calvin College. *Mr. D. Miller.*

360 **Afro-American History.\*** F 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. R. Jelks.*

380 **Field Work in Middle East Archaeology.** Summer. An on-site introduction to archaeological field work in the Middle East designed to expose the student to the methodologies involved in stratigraphic excavation, typological and comparative analysis

of artifacts, and the use of nonliterary sources in the writing of Middle East history. Special arrangements should be made with the department chair. *Mr. B. de Vries.*

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

393 **Museum Studies.\*** F and S. (Also listed as Art 393.)

395 **W Seminar in History.\*** F and S. A course in historiography, the philosophy of history, historical bibliography, and the writing of history. *Mr. E. Van Kley.*

## GRADUATE COURSES

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

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **The Crucial Decade plus Five Years: The U.S. 1945-1960.** *R. Bolt.*

W11 **The Classical Ottoman Empire: History/Historiography.** *D. Howard.*

W50 **Religion, Commerce, and Reform in Antebellum America.** *J. Bratt.*

## JAPANESE LANGUAGE AND LITERATURE

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*Associate Professor L. Herzberg, (W. Bratt, chair, Department of Germanic Languages)*

A minor or teaching minor in Japanese language and literature consists of seven courses: 101, 102, 201, 202, 215, 216, and one literature course. A Japanese study group minor consists of seven courses: Japanese 101, 102, 201, 202, plus any three courses from Art 241, History 203, Political Science 205, and approved Interim courses. One such interim course on Japan will be offered each year by the Japanese instructor.

The foreign language core requirement can be met by the study of Japanese through the intermediate level (202).

101 **Elementary Japanese.** F An introduction to Japanese culture and language, stressing both spoken and written Japanese. After one semester students will be able to carry on simple conversations in Japanese, read dialogues written in Japanese, and understand some fundamentals of Japanese social values and ways of thinking. *Mr. L. Herzberg.*

102 **Elementary Japanese.** S Continuation of 101, a study of Japanese grammar with equal emphasis on improving conversational proficiency and on reading and writing Japanese. "Kanji" — the syllabary made up of Chinese characters — will be introduced for reading and writing and as a medium for gaining insight into Japanese culture. Prerequisite: Japanese 101 or permission of instructor. *Mr. L. Herzberg.*

201 **Intermediate Japanese.** The goal of this course is to further the student's ability to speak and understand, read and write the Japanese language. Extensive oral drills and reading exercises continue to be used. By the end of the term the student will know 300 "kanji." *Mr. L. Herzberg.*

202 **Intermediate Japanese.** This term completes the study of basic Japanese grammar and syntax. By the end of the term the student will have been introduced to all the basic grammar patterns of Japanese and will have mastered a total of 500 "kanji." *Mr. L. Herzberg.*

215 **Advanced Conversation.** This course is designed to develop advanced aural comprehension skills as well as advanced competence in spoken Japanese through exer-

cises, drills, and conversation in class. Students will also continue their study of the written language by learning many new "kanji." Prerequisite: Japanese 202 or permission of instructor. *Mr. L. Herzberg.*

**216 Advanced Grammar and Composition.** The systematic study of advanced grammar and composition. Students will learn many new "kanji" as they improve their skills in written Japanese. Conversation practice will also be emphasized. Prerequisite: 215 or permission of the instructor. *Mr. L. Herzberg.*

**217 Introduction to Modern Japanese Literature: 1868 to the Present.** A continuation of Japanese language study and an introduction to works written by major Japanese authors from 1868 — when Japan opened itself to the rest of the world and

entered the modern era — to the present, as well as selected readings on Japanese history, society, and culture. Prerequisite: Japanese 216. *Mr. L. Herzberg.*

**218 Further Studies in Modern Japanese Literature: 1868 to the Present.** This course builds on Japanese 217 and deals with literary texts of greater linguistic difficulty. It also includes further language study and selected readings on Japanese history, society, and culture. Prerequisite: Japanese 217. *Mr. L. Herzberg.*

#### JANUARY 1995 INTERIM

*A catalog with the descriptions of all the interim courses is available after October 1994.*

**IDIS W27 The Japanese Today: Friend or Foe?** *L. Herzberg.*

## LATIN

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See the department of classical languages for a description of courses and programs of concentration in Latin.

## MATHEMATICS

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*Professors J. Bradley, D. Brink, E. Fife\*\*, T. Jager, J. Koop, D. Laverell, S. Leestma, L. Nyhoff, M. Stob (chair, Department of Mathematics and Computer Science), G. Talsma, G. Van Zwalenberg, G. Venema†, X. Ye\*\*, P. Zwier*

*Associate Professor J. Ferdinands\**

*Assistant Professors G. De Young, S. Dirkse, Y. Jeong*

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 major program of concentration consists of 160 or 161; 162; two of 231, 243, 255, 261; 351; 361; two additional 300-level courses; two semesters of 391; and an approved interim. This is a minimal program and students with specific educational or career plans often take more courses. Such programs are planned in consultation with a departmental advisor. Computer Science 151 is a required cognate, and a second course in computer science is recommended. Students who have had only three years of high school mathematics should take 110 before enrolling in 161. A screening test is given to incoming students during orientation to determine proper placement in 160 or 161. A minor consists of 161, 162, two 200-level courses, and two 300-level courses. Computer Science 151 is a recommended cognate.

The major program for secondary education students consists of 160 or 161, 162, 243, 255, 351, 361, 321, 325, two semesters of 391, and an approved interim. Computer Science 151 is a required cognate. The minor program for secondary education

students consists of 160 or 161, 162, 243, 255, 361, and 321 with Computer Science 151 as a required cognate. The elementary teaching minor consists of 221, 222; three other mathematics courses chosen in consultation with an advisor from the department; and one from CPSC 100, 121, or 151. The minor should be chosen in consultation with a departmental advisor as several substitutions are possible depending on the student's mathematical background. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department.

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

The core requirements in mathematics may be met by 100, 132, 143, 160, 161, or 221.

## MATHEMATICS

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

**110 Precalculus Mathematics.** F and S. A course in elementary functions to prepare students for the calculus sequence. Topics include the properties of the real number system, inequalities and absolute values, functions and their graphs, solutions of equations, polynomial functions, trigonometric functions, exponential and logarithm functions. Prerequisite: three years of college preparatory mathematics. *Staff.*

**132 Calculus for Management, Life, and Social Sciences.** F and S, core. Functions, limits, derivatives. Applications of derivatives to maximum-minimum problems; exponential and logarithmic functions; integrals; functions of several variables. Not open to those who have completed 161. Prerequisite: 143 or permission of instructor. *Staff.*

**143 Probability and Statistics.** F and S, core. An introduction to the concepts and meth-

ods of probability and statistics. The course is designed for students interested in the application of probability and statistics in business, economics, and the social and life sciences. Topics include descriptive statistics, probability theory, random variables and probability distributions, sampling distributions, point and interval estimation, hypothesis testing, analysis of variance, and correlation and regression. Prerequisite: one year of algebra and one year of geometry in high school. *Staff.*

**160 Elementary Functions and Calculus I.** F, core, one and one-quarter course units. This course is an alternative to Mathematics 161 for students who have completed four years of high school mathematics but who are not ready for calculus. Placement in Mathematics 160 or Mathematics 161 is determined by a calculus readiness test administered to incoming first-year students during orientation. Topics include functions and their graphs, trigonometric functions, logarithmic and exponential functions, limits, derivatives, applications of derivatives, integrals, and applications of integrals. Prerequisite: four years of college preparatory high school mathematics. *Staff.* Not offered 1994-95.

**161 Calculus I.** F, I, and S, honors section, core. Functions, limits, derivatives, applica-

tions of derivatives, integrals, applications of integrals. Prerequisite: either four years of college preparatory mathematics and an acceptable score on the calculus readiness test administered by the department during orientation, or 110. *Staff*.

**162 Calculus II.** F and S, honors section. Exponential and logarithmic functions, trigonometric functions, techniques of integration, sequences and series. Prerequisite: 160 or 161. First-year students with advanced placement (AP) credit for Calculus I should enroll in section AP. *Staff*.

**221 The Real Number System and Methods for Elementary School Teachers.** F and S, core. This course provides prospective elementary school teachers with background needed for teaching elementary mathematics. Both content and methodology relevant to school mathematics are considered. Topics covered include the real number system and its subsystems. Pedagogical issues addressed include the nature of mathematics and of mathematics learning, and the role of problem solving and the impact of technology in the elementary school mathematics curriculum. Prerequisites: one year of algebra and one year of geometry in high school. *Mr. T. Jager, Ms. J. Koop*.

**222 Geometry, Probability, Statistics, and Methods for Elementary School Teachers.** F and S. This course is a continuation of 221. Both content and methodology relevant to teaching geometry, probability, and statistics in elementary school are considered. Topics covered include basic geometric concepts in two and three dimensions, transformational geometry, measurement, probability, and descriptive and inferential statistics. Pedagogical issues addressed include the place of geometry, probability, and statistics in the elementary school curriculum, use of computers in mathematics, and the development of geometric and probabilistic thinking. Prerequisite: 221 or permission of instructor. *Ms. J. Koop, Mr. G. Talsma*.

**231 Differential Equations with Linear Algebra.** S. Solutions and applications of first and second order ordinary differential equations. Laplace transforms. Elementary linear algebra. Systems of linear differential equations, numerical methods, non-linear

equations. Prerequisites: 162 and experience in computer programming. *Staff*.

**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 a statistical package such as MINITAB or SPSS. Prerequisite: 162. *Staff*.

**255 Applied Linear Algebra.** 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 either Computer Science 141 or 151. *Mr. S. Dirkse*.

**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 Poincaré model. Prerequisite: a 200-level course. *Mr. G. Talsma*.

**325 History of Mathematics.** S, alternate years. 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. D. Laverell*.

**333 Partial Differential Equations.** F Methods for solving heat, wave, and potential equations, Fourier series, orthogonal functions, Sturm-Liouville problems, separation of variables, Fourier transforms, numerical methods. Intended for students in engineering, the physical sciences, and applied mathematics. Prerequisites: 231 and 261. *Mr. D. Brink*.

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

als, numerical integration, applications to differential equations, Lagrange and spline interpolation, least squares approximations, orthogonal polynomials, and applications. Also listed as Computer Science 335. Prerequisites: Computer Science 141 or 151 and two 200-level courses in mathematics. *Mr. S. Dirkse.*

**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. Y. Jeong.*

**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. Y. Jeong.*

**351 Abstract Algebra.** S. Set theory, relations and functions, equivalence relations; the integers, mathematical induction, and elementary number theory; groups, rings, fields, and polynomials. Prerequisite: 361. *Mr. J. Ferdinands.*

**352 Advanced Linear Algebra.** S, alternate years. Vector spaces, matrices, linear equations, linear transformations, determinants, polynomial algebras, eigenvalues and eigenvectors, inner-product spaces, spectral decompositions, canonical forms for matrices. Prerequisite: two 200-level courses. *Mr. G. De Young.*

**359 Seminar in Secondary Teaching of Mathematics.** F A course in perspectives on, principles of, and practices in the teaching of mathematics on the secondary level. This course should be taken concurrently with Education 346. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in mathematics. *Mr. G. Talsma.*

**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. M. Stob.*

**362 Real Analysis II.** S, alternate years. A continuation of 361. Sequences and series

of functions, functions of several variables, Lebesgue integration. Prerequisite: 361. Not offered 1994-95.

**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 Zwahlenberg.*

**381 Advanced Logic.** F, alternate years. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Philosophy Department and also listed as Philosophy 381. *Mr. T. Jager.*

**385 General Topology.** F, alternate years. Elementary set theory, topological spaces, separation properties and connectivity, continuous mappings, homeomorphisms, product and quotient spaces, invariants under continuous mappings, compactness, metric spaces and completeness. Prerequisite: 261 or 362. Not offered 1994-95.

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

**391 Colloquium.** F and S, no credit. Meets weekly for an hour for the presentation of various topics in mathematics, computer science, and related disciplines by students, faculty, and visiting speakers. Prerequisites: two 200-level courses. *Mr. T. Jager.*

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

### JANUARY 1995 INTERIM

A catalog with the descriptions of all interim courses is available after October 1994.

**W50 From  $F=ma$  to  $E=mc^2$ .** *J. Ferdinands, P. Zwier.*

**W51 Curriculum Projects in Elementary and Middle School Mathematics.** *G. Talsma.*

**W52 Computer Networks.** *B. Baas, D. Laverell.*

**MATH 161 Calculus I (core).** *T. Jager.*

# MUSIC

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Professors D. De Young, J. Hamersma, G. Huizenga, H. Slenk, C. Stapert, D. Topp,  
J. Worst (chair)

Associate Professors C. Kaiser, M. Mustert

Assistant Professor H. Kim

Adjunct Professor C. Smith

Within the liberal arts framework, the Music Department addresses itself to students majoring in music, to general students wishing to increase their understanding and enjoyment of music through study, and to the campus community. Students can major in music by following one of the programs of study outlined below, fulfill a fine arts core requirement by taking one of the specified core courses, or take any course for which they are qualified. In addition, any qualified student may participate in one of the many performing ensembles or take private lessons. All students, as well as the general public, are welcome at the frequent concerts sponsored by the Music Department.

The Music Department offers a variety of programs of study leading to the Bachelor of Arts degree. Each of the programs builds on most or all of a central core of basic courses. For admission to a program of study, students must complete 105, 108, 213, and 215 with a minimum grade of C (2.0) in each. (Music 108, 213 and 215 require a pre-college level of skill in the rudiments of music, aural perception and keyboard ability. An assessment test will be given in the first week of 105 for students considering a major in music.)

*Basic courses in music.* Most of the programs listed below require the following ten basic courses (totalling eight course units): 105, 108, 213, 215, 205, 206, 207, 208, 305, and 308.

*The Liberal Arts major in music.* This major in music leading to the Bachelor of Arts degree consists of a survey of the structure and history of music. It is comprised of 10.5 course units: the ten basic courses (105, 108, 213, 215, 205, 206, 207, 208, 305, and 308); one half course unit in private lessons, one half course unit of ensemble, 237, and Music 202 or one course unit elective (in full, half, or quarter course combinations). Mr. John Worst is the advisor for this program. Students with more specialized interests in music are advised to follow one of the programs described below. A six-course minor in music consists of 105, 108, 205, 234, four semesters of applied music, and one non-applied elective.

*Programs for students planning graduate work in music.* Students wishing to pursue graduate study in music, but not in education, are advised to choose one of three 14-course programs: Music History, Theory and Composition, or Applied Music. Each program requires the ten basic courses (105, 108, 213, 215, 205, 206, 207, 208, 305, and 308), eight semesters of 180, and eight semesters of ensemble (101, 111, 121, 131, 141, 151, 161, or 171). In addition, students elect four courses from one of the following areas: *Music History* — 311, 312, 313, and an approved interim course (Mr. Calvin Stapert, advisor); *Theory-Composition* — 311, 312, and two from 315, 316, 317 (Mr. John Worst, advisor); *Applied Music* — eight semesters of 210, 220, 230, 240, 260, or 270, including a solo recital (Mr. C. Kaiser, advisor). Applied Music students are allowed to begin their programs with one or two semesters of lessons at the one hundred level before beginning concentrate lessons at the two hundred level.

*Secondary education programs.* Two thirteen-course concentrations, although earning secondary teaching certificates, enable students to teach music at any level grades K–12. These programs require the ten basic courses, (105, 108, 213, 215, 205, 206, 207, 208, 305, and 308), 180 each semester, 237, 339, plus four course units from one of the following concentrations: *Instrumental music*, three from 195, 196, 197, and 198 (excluding the course that includes the student's major instrument, which course then becomes a recommended elective), 337, four semesters of 140, 150, 160, or 170; and four semesters of 151, 161 or 171 (Mr. Derald De Young, advisor), or *Vocal Music*, one from 236, 311, 312, 313, 315, 317, or an approved interim; 338, two semesters of: 110 or 210, 120 or 220, 160 or 260 (guitar only); four semesters of 130 or 230; and four semesters of 101, 111, 131, or 141 (Mr. Merle Mustert, advisor). Music 138 is a highly recommended elective for secondary music education students especially during their first year of music study.

In addition to this thirteen-course concentration in music, secondary music education students complete five additional cognates from core and professional education to fulfill state certification requirements for both a major and a minor in music. However, these students also are advised to complete a minor in another department if possible. These cognates include a core history course, a core fine arts literature course (if the history course is broad in coverage as in 101 or 102, it is recommended that the literature course focus more intensely on a narrower time frame), Philosophy 208 (which counts as the sixth course in the contextual disciplines for secondary music education majors only), Music 303 (which counts for Education 303), and Music 359. Students desiring to enter one of the music education programs will be required to meet certain standards for admission. The proposed standards, a list of seven, can be found in the *Everything Book*, the Music Department student handbook. These standards must be met by the second semester of the sophomore year.

These are the appropriate programs for students desiring to pursue graduate work in music education.

The seven-course secondary education teaching *minor* includes 105, 108, 213, 215, 205, 234, 237, 339, two semesters of 110, 120, or 160 (guitar), one semester of 130, one semester of ensemble (101, 111, 131, 141, 151, 161, 171), and a half-course elective in music (Mr. Merle Mustert, advisor).

*Elementary education programs.* A ten-and-one-half course *major* concentration qualifies graduates to teach any subject in a self-contained classroom *and* to teach music in grades K-8. The program requires nine of the ten basic courses (105, 108, 213, 215, 205, 206, 207, 208, and 305), 237, 238, two semesters of: 110 or 210, 120 or 220; two semesters of 130 or 230; two semesters of 101, 111, 131, or 141; and a half-course elective in music (Mr. Howard Slenk, advisor).

A seven-course *minor* concentration also prepares students to teach music and in a self-contained classroom. This program includes 105, 108, 213, 215, 205, 234, 237, 238, two semesters of ensemble (101, 111, 131, or 141), and two semesters of private lessons (110, 120, 130, or 160 — guitar) (Ms. Trudi Huizenga, advisor).

Elementary education students also may complete a five-course sequence in music as part of an Fine Arts *major* concentration — 105, 205, 234, 237, 238, and a half-course of applied music — or a three-course sequence in music as part of either a Fine Arts *major* or *minor* — 105, 205 or 234, and 238 (Ms. Trudi Huizenga, advisor).

Note concerning all music education programs: In order to meet the credit re-

quirements for state certification, students who take 101 or 111 rather than 131 or 141 will need to complete additional electives in order to reach the required total course units. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department.

*Programs for students interested in church music.* Students preparing for work in church music may choose to focus either on organ or choir. Each 15 course program includes the ten basic courses, (105, 108, 213, 215, 205, 206, 207, 208, 305 and 308), 236, and 237. In addition, students elect five and one-half courses from one of the following areas: in *Organ* — 110 (first two semesters), 210 (six semesters including directed field work and a public recital with scores), two semesters each of 130 and ensemble (101, 111, 131, or 141), and an interim in church organ music (Mr. John Hamersma, advisor); in *Choir* — six semesters of 130, two semesters of 110 or 120, 337 and 338, six semesters of choir (101, 111, 131, or 141), and an interim in church choir music which includes some directed field work and a public choral recital (Mr. Howard Slenk, advisor). A six-course minor in church music consists of 105, 108, 236, 237, and either six semesters of 110 and an interim in church organ music or four semesters of 130, two semesters of 131 or 141, and an interim in church choir music.

*General regulations.* Mr. Calvin Stapert is the advisor for general, undecided students considering a major in music. Mr. Dale Topp counsels undecided students considering a major or minor in music education. All *transfer* students must consult with Mr. John Hamersma at or before their first registration to receive counseling into an appropriate sequence of music courses. Such students also must validate, during their first semester at Calvin, their transfer credits in keyboard harmony with Ms. Marilyn Slenk and their transfer credits in aural perception with Ms. Hye Sook Kim. Those not meeting minimum standards will be required to enroll in 213 or 215.

*Core courses in music.* Students with any possible plans concerning further music study should enroll in 105 as their fine arts core course, for this class provides counsel about the various programs and the individual student's qualifications for each. Another option for students with some musical background who desire core credit is 234. Students with more limited musical experiences may prefer 103, 236, 241, or 242 as their core course elective in music. Music 238 earns core credit for elementary education students only.

*Required concert attendance.* All music majors are required to attend four concerts or recitals, per-semester, in which they do not participate. See department handbook for details.

## GENERAL AND CORE COURSES

**103 The Enjoyment of Music.** F and S, core. An introductory course in music listening for students of any class level with any sort of musical background. Following a brief presentation of the elements of music, the course will introduce the student to the historical eras, some major composers and musical types of Western Art Music. The course will include assigned readings, listen-

ing assignments, reports on concerts, quizzes and tests. Ms. G. Huizenga, Ms. H. Kim, Mr. J. Varineau.

**105 Introduction to Music.** F, core. A broad introduction to the art of music. The course will introduce students to a wide variety of musical repertory and to rudimentary technical vocabulary. The course also aims to introduce students to fundamental issues about music in society and, in relation to

those issues, to develop their understanding of selected pieces of music. A music theory assessment test will be given during the Fall semester to all those enrolled in this course who are thinking of majoring in music. Prerequisite: the ability to read music in at least one clef. *Mr. J. Hamersma, Mr. C. Stapert.*

234 **Basic Music History.\*** S, core. A survey of the stylistic development and the cultural context of the art of music from the Classical period to the present. The class will study representative works of major composers. *Mr. C. Stapert.*

236 **The Enjoyment of Church Music.** S, core. How is music useful to the church, what ought one to listen for in church music, by what criteria should church music be judged, how is one to worship by means of music, and how is church music to be enjoyed? Lectures, discussions, readings, record listening, and church services. Open to freshmen. *Mr. J. Hamersma.*

241 **American Music I.\*** F core. A survey course of American folk and folk/popular music, both secular and sacred, beginning with the Anglo-American folk tradition and including folk music from the Afro-American, Hispanic, and Amer-Indian traditions; folk hymns and urban gospel music; and country, blues and rock popular music. No prerequisite. Six short papers, quizzes, and exam. *Mr. J. Worst.*

242 **American Music II.\*** S, core. A continuation of American Music I; however, I not needed as prerequisite. A survey course of music for theater, parlor, dance floor, concert hall, and electronic studio. Study includes band music, parlor songs, ragtime, jazz, music from Broadway and Tin Pan Alley, the main-stream classical tradition, experimental and avante-garde music, and music and electronic technology. Six short papers, quizzes, and a final essay exam. No prerequisite. *Mr. J. Worst.*

### BASIC COURSES

108 **Music Theory I.** S. A study of tonal harmony covering triads, inversions, non-harmonic tones, cadences, dominant seventh chords, and non-dominant seventh chords.

In addition to part-writing and analysis, this course includes ear training and keyboard harmony. Prerequisites: 105 and passing the Theory Assessment Test. *Mr. H. Slenk.*

213 **Aural Perception.** 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 tone; also major, minor, and modal scales and melodic dictation. Harmonic perception involves the major and minor triads in root position, first inversion, and second inversion, as well as augmented and diminished triads. To be taken concurrently with 207. Prerequisites: 105, 108, and passing the Theory Assessment Test. *Ms. H. Kim.*

215 **Keyboard Harmony.** 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 207. Prerequisites: 105, 108, piano skills (ordinarily about one year of piano study), and passing the Theory Assessment Test. Others will be required to take remedial piano. *Ms. M. Slenk.*

205 **Music History I.** F. A study, via listening, score study, and source readings, of music of Western civilization prior to 1750. After a brief introduction to world music, the course continues with study of musical thought in antiquity and the early Christian era, Gregorian chant, and the principal repertoires of polyphony through the Baroque period. Prerequisites: 105 and 108 or permission of instructor. Students in music major or minor programs take this course concurrently with 213, 215 and 207. *Mr. C. Stapert.*

206 **Music History II.** S. A continuation of Music History I. This course is a study of music of Western civilization from 1750 to 1950. The course emphasizes the relationship of music to cultural and intellectual

history, beginning with the impact of Enlightenment thought on music, continuing with the Romantic revolution, and concluding with the various 20th century continuations of, and reactions to, Romanticism. Prerequisites: 205 and 207 or permission of instructor. To be taken concurrently with 208. *Mr. C. Stapert.*

207 **Music Theory II.** F, half-course. A continuation of Music Theory I covering irregular resolutions, modulation, secondary dominants, borrowed chords, augmented sixth chords, the Neapolitan sixth chord, and the diminished seventh chord. Prerequisites: 105 and 108. To be taken concurrently with 213, 215, and 205. *Mr. H. Slenk.*

208 **Music Theory III.** S. A continuation of Music Theory II covering chromatic third-relation harmony, modulation to foreign keys, extended tertian harmonies, and a brief introduction to post-tonal techniques. To be taken concurrently with 206. Prerequisite: 207. *Mr. J. Worst.*

305 **Music History III.** F. A continuation of Music History II. The course is a study of Western fine art music since 1950, non-Western music as it interacts with the Western musical tradition, and Western (especially American) popular music and its interaction with both of the above. Topics include: electronic and computer music, aleatoric and avant-garde music; traditional and modern music of Africa, the Orient, Eastern Europe, the Near East; Amer-Indian music, music and technology; rock music, and the formation of a youth sub-culture. Prerequisites: 206 and 208 or permission of the instructor. *Mr. J. Worst.*

308 **Analysis and Criticism.\*** S. An in-depth analysis of a variety of musical works representing at least one non-Western culture, at least one contemporary popular style, and the major historical style periods of Western art music. The analysis will be done not only by studying each piece "in terms of itself" but also "in the context." Students will be exposed to a variety of analytical methods and the assumptions behind them. They will also be encouraged to go beyond analysis to evaluation. *Mr. C. Stapert.*

## ADVANCED COURSES

202 **Aesthetics.** See Philosophy 208.

237 **Conducting.** F, S, half course. A course in basic, general conducting, normally taken in the sophomore year. Prerequisite: 105 or sophomore standing with concurrent enrollment in 105. *Mr. M. Mustert.*

311 **Vocal Polyphony of the Renaissance.\*** F. A study of the vocal style of Palestrina. Exercises in modal counterpoint. Listening repertory of compositions. Prerequisite: 205 and 207. *Mr. J. Hamersma.*

312 **Instrumental and Vocal Polyphony of the Late Baroque.\*** S. A study of contrapuntal practice of late Baroque composers, principally J. S. Bach. Exercises in tonal counterpoint. Listening repertory of compositions. Prerequisite: 205 and 208. *Mr. J. Hamersma.*

313 **Studies in Music History.** Not offered 1994-95.

315 **Arranging, Orchestration, and Scoring.\*** F. Survey of the history of the orchestra and orchestration, and problems involved in writing for orchestra, band, and small ensembles. A study of the technical capabilities of each instrument. Projects written by class members will be performed by department organizations whenever possible. Prerequisite: 108. *Mr. J. Worst.*

316 **Arranging, Orchestration, and Scoring.\*** S. Continuation of 315, which is prerequisite. *Mr. J. Worst.*

317 **Composition.\*** F and S. Writing in contemporary forms and according to contemporary practice. Prerequisite: 108 or permission of the instructor. May be repeated for credit as often as a student's schedule allows. Performance of student works is required. *Mr. J. Worst.*

337 **Instrumental Conducting.\*** F (even years), half course. A course in advanced conducting techniques appropriate to bands and orchestras. Prerequisite: 237. *Mr. D. De Young.*

338 **Choral Conducting.\*** F (even years), half course. A course in advanced conducting techniques appropriate to choirs. Students will be required to attend some Mon-

day evening rehearsals of the Oratorio Society. Prerequisite: 237. *Mr. H. Slenk.*

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

### MUSIC EDUCATION

138 **Introduction to Music Education.** F, S, quarter course. This course introduces music education majors to three basic aspects of their chosen vocation: a) the establishment of an inclusive music-learning community in which students of every skill level can develop freely, b) the implementation of pedagogy that addresses multiple learning styles, and c) the experiencing of musical learning through unaccompanied singing, games, dance, creative dramatics, creative drawing, solfege with hand signals, listening, and simulated and simplified notation. Short and varied written excerpts replace a traditional textbook, and journaling replaces formal tests. Required in all music education programs. *Mr. Topp.* Meets with Music 238.

238 **Music and Community.\*** F and S, core in elementary education, recreation, social work, and missions programs. This course includes at least three simultaneous strands of learning: an active and experimental study of music through unaccompanied singing, games, dance, creative dramatics, creative drawing, signing, hand signals, rhythm names, listening, and simulated and simplified musical notation; an active experiencing of affirming community in which students practice and analyze the effects of trusting cooperation on their learning; and an active experiencing of learning through a variety of pedagogical styles. Journal writing, reading a variety of articles, and team assignments replace traditional textbook readings and tests. Required in certain elementary education programs but also recommended for other programs that work with groups of people. *Mr. D. Topp.*

303 **Introduction to Music Teaching.\*** F and S. An analysis of the teaching-learning process in the classroom. The course includes observation and participation in school activities and a laboratory experience to develop competence in the classroom use of audio-visual equipment. This course substitutes for Education 303 for secondary

music education students and must be taken concurrently with Education 301. The in-school experience will be divided equally between traditional classroom and music teaching. *Mr. D. Topp.*

339 **School Music.\*** F; half course. A study of the philosophy, methods, and materials for teaching elementary and secondary school music. This course is required of secondary music education majors and minors. *Mr. D. Topp.*

359 **Seminar in Music Methods.** S. A seminar taught in conjunction with Education 346 involving general problems of pedagogy as well as the specific methods for teaching music in rehearsal and classrooms. The seminar provides a forum for the discussion of problems that develop during directed teaching. *Mr. D. Topp.*

### APPLIED MUSIC

*Not more than two course units of credit in applied music and drama may be applied to the minimum requirements for graduation unless the addition is part of a designated major or minor music concentration. See fees on page 30.*

#### 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. *Mr. J. Hamersma, Mr. J. Tuuk.*

120 **Piano.** Quarter course. Individual lessons in piano. *Ms. H. Kim, Ms. L. Vanden Berg, Mr. R. Ridenour.*

130 **Voice.** Quarter course. Individual lessons in voice. *Ms. D. De Boe, Ms. T. Huizenga, Mr. C. Kaiser.*

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

150 **Percussion.** Quarter course. Individual lessons in snare drum, tympani, and other percussion instruments. *Mr. D. Gross.*

160 **Strings.** Quarter course. Individual lessons in violin, viola, violoncello, bass viol, or classical guitar. *Mr. P. Vondiziano, Staff.*

170 **Woodwinds.** Quarter course. Individual lessons in flute, oboe, clarinet, bassoon, saxophone, or recorder. *Mr. M. Colley, Ms. D. Dugan, Mr. J. Varineau, Staff.*

210 **Advanced Organ.** Half course. Individual lessons for the music major concentrating in organ. *Mr. J. Hamersma.*

220 **Advanced Piano.** Half course. Individual lessons for the music major concentrating in piano. *Ms. H. Kim.*

230 **Advanced Voice.** Half course. Individual lessons for the music major concentrating in voice. *Mr. C. Kaiser.*

240 **Advanced Brasses.** Half course. Individual lessons for the music major concentrating in trumpet, horn, euphonium, trombone, or tuba. *Mr. D. De Young, Staff.*

260 **Advanced Strings.** Half course. Individual lessons for the music major concentrating in violin, viola, violoncello, bass viol, or classical guitar. *Mr. P. Vondiziano, Staff.*

270 **Advanced Woodwinds.** Half course. Individual lessons for the music major concentrating in flute, oboe, clarinet, bassoon, saxophone, or recorder. *Mr. J. Varineau, Staff.*

#### CLASS LESSONS

180 **Repertory Class and Studio Classes.** F and S, weekly, no credit. Performance classes for students of applied music for the purpose of gaining experience in public performance and increasing knowledge of music literature. Attendance is required of all music majors and students registered for individual lessons in applied music. *Staff.*

195 **String Methods and Arranging.** F (odd years), half course. Class lessons on all string instruments for the instrumental music education major. Includes basic arranging techniques for strings. Emphasis is on the methods for teaching string instruments. Elementary playing skills are developed. *Ms. M. DeYoung, Mr. J. Worst.*

196 **Brass Methods and Arranging.** S (even years), half course. Class lessons on all brass instruments for the instrumental music education major. Includes basic arranging techniques for brasses. Emphasis is on the methods for teaching brass instruments. Elementary playing skills are developed. *Mr. D. De Young, Mr. J. Worst.*

197 **Percussion Methods and Arranging.** F (even years), half course. Class lessons on percussion instruments for the instrumental music education major. Includes basic arranging techniques for percussion. Emphasis is on the methods for teaching percussion instruments. Elementary playing skills are developed. *Mr. D. Gross, Mr. J. Worst.*

198 **Woodwind Methods and Arranging.** S (odd years), half course. Class lessons on all woodwind instruments for the instrumental music education major. Includes basic arranging techniques for woodwinds. Emphasis is on the methods for teaching woodwind instruments. Elementary playing skills are developed. *Mr. J. Worst, Mr. J. Varineau.*

#### ENSEMBLES

Membership in ensembles is limited to Calvin students except when there is a specific need and the non-student is not replacing a student.

101 **Meistersingers.** F and S, quarter course. An ensemble devoted to singing a wide variety of literature suitable to the college male glee club. Open to the general college student. *Mr. M. Mustert.*

111 **Lyric Singers.** F and S, quarter course. An ensemble of treble voices devoted to singing a wide variety of literature, both sacred and secular. Emphasis is given to three- and four-part singing, voice development and preparation for performances. Open to the general college student. First-year women who wish to sing in a choir will normally be required to sing in the Lyric Singers. *Mr. M. Mustert.*

121 **Collegium Musicum.** F and S, quarter course. An ensemble of singers and instrumentalists devoted to the performance of medieval, Renaissance, and Baroque music. Open to all students who meet the requirements of instrumentation and the demands of musicianship. Collegium can also include various other traditional chamber ensembles such as string quartet. These are open to members of band and orchestra who meet the requirements of instrumentation and the demands of musicianship. Not offered 1994-95.

131 **Campus Choir.** F and S, quarter course. Representative works in the field of choral

literature are studied and sung. Emphasis is given to the development of singing and sight-reading skills as well as to regular performances. Membership is open to all students who meet the requirements of voice and musicianship. *Mr. H. Slenk.*

141 **Capella.** F and S, quarter course. Representative works in the field of choral literature are studied and prepared for concert performance. Membership is maintained at a set limit and is open only to those who meet the demands of voice, sight reading, and choral musicianship. Normally one year of experience in a college choir is required. *Mr. M. Mustert.*

151 **Knollcrest Band.** F and S, quarter course. Representative works in wind literature are studied and prepared for concert performance. Meets three times weekly and is open to all freshman and sophomore students who wish to participate in a concert band. *Mr. D. De Young.*

161 **Calvin Band.** F and S, quarter course. Representative works in wind literature are studied and prepared for concert performance. Meets four times weekly and membership is maintained at a set instrumentation. *Mr. D. De Young.*

171 **Orchestra.** F and S, quarter course. Representative works in the field of chamber and symphony orchestra literature are studied and prepared for concert performance. Open to all students who meet the demands of musicianship. *Mr. D. De Young.*

181 **Oratorio Chorus.** No credit. The study of representative works of the great masters of choral writing with a view to public performance. Handel's Messiah is performed annually at Christmas time and another oratorio is presented in the spring. Open to all who meet the requirements of voice and musicianship. *Mr. H. Slenk.*

#### GRADUATE COURSES

510 **School Choral Music.** An examination of the significant choral literature from the Renaissance to the present day. For daily research projects the student will use the reference works, scores, and recordings in the

Calvin libraries. The instructor will call attention to the repertoire suitable for junior and senior high school choirs. Prerequisite: undergraduate major or minor in music or permission of instructor. *Mr. M. Mustert.*

511 **School Instrumental Music.** A survey of music and materials available for instrumental classes, small ensembles, bands and orchestras at the elementary, middle, and high school level. The course covers such topics in terms of their musical value as well as for their effectiveness as teaching tools, the history and the development of literature for the wind band, and the principles of good programming. *Mr. D. De Young.*

512 **Using Music to Teach Other Subjects.** An examination of the ways in which music may support the learning of such other subjects as history, literature, geography, physical education, basic school skills, Bible, psychology, sociology, and foreign languages. Students will learn how to find, evaluate, and present music in areas that they select. No previous musical skills are required. Students electing the course for only one-half course credit will do less research. *Mr. D. Topp.*

513 **Analysis.** A study of a wide variety of musical works selected from the major historical style periods of Western music. The goal will be to broaden and deepen the students' understanding of some of the principal techniques, styles, forms, and modes of expression in the music of Western civilization. Prerequisite: six college-level courses in music history and theory or permission of the instructor. *Mr. C. Stapert.*

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.*

## JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **Music by Women: A Fragile Crescendo.** *T. Huizenga.*

W11 **Vocal-Choral Pedagogy.** *M. Mustert.*

W12 **Basic ETM (Education Through Music)** *D. Topp.*

W50 **Mozart.** *C. Stapert.*

W51 **Church Music for Organists.** *J. Hamersma.*

W52 **Introduction to the Rudiments of Music.** *Mr. H. Slenk.*

## NURSING

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*Professor M. Viehl (chair)*

*Associate Professor M. Doornbos*

*Assistant Professors S. Etheridge, C. Feenstra, M. Flikkema, S. Rozendal,*

*B. Timmermans*

*Adjunct Faculty S. Benner, A. Briggs, T. George, S. Mlynarczyk, D. Sietsema, M. Smit*

*Instructor G. Zandee*

Students should indicate their interest in nursing at the time they apply for admission to the college. They should begin work on their pre-nursing requirements in their freshman year, following closely the suggested program on page 86-87. Transfer students who wish to be considered for admission to the nursing program should consult the department chair.

By January 15 of the sophomore year, students must apply for admission to the Hope-Calvin Department of Nursing. Application forms are available in the department. To be eligible to begin the nursing program a student must have completed the eighteen courses in the pre-nursing program, nine of which must be the required courses in the natural and social sciences. A minimum cumulative grade point average of C+ (2.3) is required and a minimum grade of C- (1.7) is required in each of the natural and social science courses. Since enrollment in the final two years—the clinical nursing years—is limited, admission is selective, and completion of the pre-nursing program does not assure acceptance.

The baccalaureate nursing program requirements are described on page 86.

315 **Pathophysiology.** F, one course unit. Students will study selected disease conditions related to circulation, respiration, fluid balance, digestion, body defense mechanisms, endocrine, and neuro physiological processes. Physiologic changes of pregnancy, labor and delivery will be included. Material will be presented primarily at the organ and system level. This course will serve as a foundation for providing holistic nursing care from a Christian perspective for further courses in nursing care. Prerequisite: acceptance into the nursing program. *Ms. D. Sietsema, Ms. G. Zandee.*

323 **Introduction to Nursing Care.** F, one course unit. Students will be introduced to

the theory and practice of professional nursing. Fundamental concepts of caring relationships and Christian nursing care are included with a focus on childbearing families. The course includes an introduction to the nursing process, legal-ethical issues, communication, nutrition and principles of teaching-learning. Prerequisite: acceptance into the nursing program. *Ms. C. Feenstra, Ms. A. Briggs.*

331 **Introduction to Nursing Interventions.** F, one course unit. This course is designed to assist students in developing basic nursing techniques in health history taking and physical assessment, psychomotor skills, nursing process and communication. The

course provides laboratory practice in a simulated hospital environment, focused clinical practice in an acute care hospital and clinical practice in a hospital-based, maternal-child setting. Independent learning activities with audio-visual and computer assisted instruction are incorporated throughout the course. Prerequisite: acceptance into the nursing program. Ms. A. Briggs, Ms. C. Feenstra, Ms. D. Sietsema, Ms. B. Timmermans, Ms. G. Zandee.

**354 Caring Relationships for the Helping Professions.** I, one course unit. This course is designed for the future professional who will be involved with helping others. The course introduces the concepts of a caring relationship from a transcultural perspective. It provides the student with practical strategies for interacting with a variety of clients who may be experiencing illness, anxiety, grief crises, addiction or abuse. Both classroom and off-campus activities are included. This course is open to junior nursing students and other juniors and seniors interested in a helping profession. Ms. S. Benner, Ms. S. Etheridge, Ms. C. Feenstra, Staff.

**372 Pharmacology.** S, one-half course unit. This is a theory course with the focus on nursing pharmacology and common medication groups used to treat acute and chronic medical disorders. It considers the collaborative role of the nurse related to pharmacology and provides a basis for the development of clinical competencies related to medication administration and client management. Prerequisites: 315, 323, 331, 354. Ms. D. Sietsema, Ms. G. Zandee.

**382 Nursing Care of Adults.** S, one and one-half course units. This course focuses on the nursing care of adult clients and their families who are adapting to acute and chronic health alterations. Taken in junior year as 382. If taken in senior year 432 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Etheridge, Ms. M. Flikkema, Staff.

**432 Nursing Care of Adults.** F, one and one-half course units. This course focuses on the nursing care of adult clients and their families who are adapting to acute and chronic health alterations. Taken in senior year as 432. If taken in junior year 382 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Etheridge, Ms. M. Flikkema, Staff.

**386 Caring Interventions in Adult Nursing.** S, one and one-half course units. This course will take place in the acute care setting where the student will care for adults with a variety of medical-surgical problems. Learning experiences include laboratory and supervised clinical practice. Taken in junior year as 386. If taken in senior year 446 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Etheridge, Ms. M. Flikkema, Staff.

**446 Caring Intervention in Adult Nursing.** F, one and one-half course units. This course will take place in the acute care setting where the student will care for adults with a variety of medical-surgical problems. Learning experiences include laboratory and supervised clinical practice. Taken in senior year as 446. If taken in junior year 386 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Etheridge, Ms. M. Flikkema, Staff.

**384 Nursing Care of Children and Psychiatric Clients.** S, one course unit. This course focuses on the nursing care of children and psychiatric clients, and their families who are adapting to acute and chronic health alterations. Students will design nursing care strategies that address clients' physiologic, psychosocial, and spiritual needs according to professional nursing standards. Learning activities will focus on caring interactions with children, psychiatric clients, and their families to achieve health. Taken in junior year. If taken in senior year 434 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. M. Doornbos, Ms. S. Benner, Ms. S. Mlynarczyk, Ms. T. George.

**434 Nursing Care of Children and Psychiatric Clients.** F, one course unit. This course focuses on the nursing care of children and psychiatric clients, and their families who are adapting to acute and chronic health alterations. Students will design nursing care strategies that address clients' physiologic, psychosocial, and spiritual needs according to professional nursing standards. Learning activities will focus on caring interactions with children, psychiatric clients, and their families to achieve health. Taken in senior year. If taken in junior year 386 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Benner, Ms. M. Doornbos, Ms. S. Mlynarczyk, Ms. T. George.

**387 Caring Interventions for Children and Psychiatric Clients.** S, one and one-half course units. This course allows the student to provide holistic nursing care for children and psychiatric clients, and their families, in the hospital. Learning experiences include laboratory work, supervised clinical, and case study analysis. Taken in junior year as 387. If taken in senior year 447 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Benner, Ms. T. George, Ms. M. Doornbos, Ms. S. Mlynarczyk.

**447 Caring Interventions for Children and Psychiatric Clients.** F, one and one-half course units. This course allows the student to provide holistic nursing care for children and psychiatric clients, and their families, in the hospital. Learning experiences include laboratory work, supervised clinical, and care analysis. Taken in senior year as 447. If taken in junior year 387 is equivalent. Prerequisites: 315, 323, 331, 354. Ms. S. Benner, Ms. T. George, Ms. M. Doornbos, Ms. S. Mlynarczyk.

**429 Nursing Research.** F, one-half course unit. In this course students will explore the value of research and its relationship to nursing theory and practice. They will identify appropriate problems for nursing research and learn the steps of the research process. Critical analysis and application of current research findings are included. Emphasis is placed on the development of critical thinking, problem-solving, and professional ethics related to the research process. Prerequisites: 315, 323, 331, 354. Taken concurrently with 432, 446, 434, 447. Ms. M. Viehl, Staff.

**459 Nursing Practicum.** I, Three-quarter course unit. This course provides students the opportunity to select a clinical area of their choice in which they provide individualized nursing care for clients. Learning experiences include theory and clinical practice with a preceptor, and individualized instruction. All shifts and working days may be used. Prerequisites: 315, 323, 331, 354, 372, 382/432, 386/446, 384/434, 387/447, 429. Staff.

**476 Nursing Care and Management of Clients in the Community.** S, one course unit. This course focuses on the nursing care and management of clients in a variety of community settings. Nursing strategies for the promotion and maintenance of health for families, groups, populations at risk and communities will be emphasized. Prerequisites: 315, 323, 331, 354, 372, 382/432, 386/446, 384/434, 387/447, 429, 459. Ms. A. Briggs, Ms. C. Feenstra, Staff.

**478 Caring Interventions for Clients in the Community.** S, one and one-half course units. This course is designed for the students to focus on nursing care for clients in the community with an emphasis on health promotion and maintenance. Learning experiences include independent and supervised clinical practice in community health agencies. Students will plan, implement, evaluate and manage care for client. Prerequisites: 315, 323, 331, 354, 372, 382/432, 386/446, 384/434, 387/447, 429, 459. Ms. A. Briggs, Ms. C. Feenstra, Ms. B. Timmermans, Staff.

**484 Perspectives in Professional Nursing.** S, one-half course unit. This course will help students expand their understanding of Christian nursing and formulate a philosophy of nursing that will shape their professional lives. The students will be expected to integrate what they have learned from their liberal arts education, their understanding of the history and culture of nursing, and their religious faith. Students will reflect on how their education and professional experiences can be used for personal growth and to influence society. Prerequisites: 315, 323, 331, 354, 372, 382/432, 386/446, 384/434, 387/447, 429, 459. Ms. A. Briggs, Ms. M. Viehl, Staff.

#### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

**NURS 354 Caring Relationships for the Helping Professions.** Staff.

**NURS 459 Nursing Practicum.** D. Sietsema.

# OFF-CAMPUS PROGRAMS

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Calvin College offers semester- and year-long programs for students who want to study abroad or who would benefit from a different sort of academic experience in the United States than can be offered on campus. Although some of the programs described below are offered in conjunction with other institutions, they are officially Calvin-endorsed programs. Students in these programs maintain their eligibility for scholarships, grants, and loans. Students in most programs must be juniors or seniors but in Calvin sponsored programs, such as the Study in Spain, Semester in Hungary and Semester in Britain programs, sophomore students may be participants.

The specific requirements for admission differ from program to program, as indicated below, but each student must be in good academic standing (normally a cumulative g.p.a. of 2.5 or above) and in good social standing, and must be recommended by the advisor of the program concerned. Furthermore, students must determine with their advisors in advance how credit for such programs will be applied to graduation requirements and state this on a Preliminary Application for Off-Campus Study. Once admitted to these programs, students must make a special registration at the Registrar's Office and must make financial arrangements (which differ from program to program) to pay the appropriate fees, including a \$75.00 administrative fee, at the Financial Services Office.

Other international programs not sponsored or endorsed by Calvin College are available to students. Credit for them will be considered as transfer credit and financial aid is not available through Calvin. Additional information about off-campus programs and preliminary application forms can be obtained from the Director of Off-Campus Study Programs.

## AMERICAN STUDIES PROGRAM

The American Studies Program in Washington, D.C. is a semester-long internship/seminar program for upper division students in most majors who are interested in having on-the-job experiences and in exploring current national and international issues with Washington professionals. The program serves as Calvin College's Washington campus and students may earn up to 4 course units of credit toward their degree. The program is sponsored by the Christian College Coalition, of which Calvin College is a member, and is supervised by the program staff in Washington. The program is designed to help students from Christian colleges throughout North America gain the experiences they need to live and work in a faithfully biblical way in society and in their chosen fields. Applicants should be juniors or seniors, should have a grade point average of 2.75 or higher, and should show promise of benefiting from the internship and

seminar experience. Further information and application forms may be obtained from Mr. Corwin Smidt of the Department of Political Science.

**ASP 320 American Studies Internship.** F and S, 2 course units. A part-time work experience in Washington, D.C. in a professional setting within the student's major field of concentration. Students may select placements in such areas as communication arts, urban ministries, marketing and corporate enterprises, law firms, trade associations, federal agencies, or political offices. Credit is granted at the discretion of each department.

**ASP 340 American Studies Seminar.** F and S, 2 course units. An inter-disciplinary examination of selected topics in the American political, historical, and cultural context. Includes four 2-credit study modules on Foundations for Public Involvement, Domestic Policy Issues, Economic Policy Issues,

and International Policy Issues. Any term, limited enrollment. May be credited as free electives or as departmental credits when accepted by individual departments.

### **AU SABLE INSTITUTE OF ENVIRONMENTAL STUDIES**

This institute is sponsored by Calvin College and other evangelical Christian colleges and offers course instruction and internships in environmental studies. In a setting of northern Michigan forests, wetlands, lakes, and rivers, students take courses which provide academic content, field experiences, and practical tools for stewardship of creational resources. Students who also complete work for a bachelor's degree at a liberal arts college approved by the Institute may earn certificates as environmental analysts, land resource analysts, water resource analysts, and naturalists.

Courses are offered during the January interim (I), during late May to early June (May term), during June and early July (Summer I), and from the middle of July to the middle of August (Summer II).

A summer fellowship and some grant-in-aid funds are available each year to qualified students. Interested students should get course enrollment forms and applications from the Au Sable advisor, Mr. Randall Van Dragt.

#### *January (Interim) Session*

**ASI 310 Winter Biology.** I. Study of the biology and environment of northern Michigan plants and animals in winter condition. Lecture, films, and field experience. Prerequisite: one course in biology.

**ASI 346 Winter Stream Ecology.** I. Geological, physical, and chemical features of streams in winter, with a focus on ecological interactions and applications to the stewardship of streams and watersheds. Prerequisite: one year of general biology.

**ASI 350 Environmental Ethics.** I. Contemporary programs of environmental stewardship are investigated, including use of renewable and nonrenewable natural resources, pollution, appropriate land use and development, Third World concerns, and preservation of wild nature. These problems are set in a historical perspective of mankind's

relationship to the natural environment, especially as this relationship is viewed in the light of Christian thought and doctrine. Current attempts to develop a theology of nature and principles of Christian stewardship are considered.

#### *May Session*

**ASI 295 Natural History in Spring.** May term. Springtime plants and animals, their field identification, field biology, behavior and landscape context, with a focus on spring flora, amphibia and birds. Designed with a focus on observation and sounds of life in the field that occur between the end of the spring college semester and the end of the spring high school semester to provide prospective teachers and naturalists with an opportunity to investigate the natural history of this very active time of year.

**ASI 305 Ornithology.** May term. Biology, behavior, ecology and identification of birds. Work will be primarily conducted in the field and will cover the major habitats of northern lower Michigan, including wetlands, lakes, rivers, forests, dunes, and open field communities. Emphasis will be placed on identification of the spring bird fauna of northern lower Michigan by sight and by call. Prerequisite: one course in introductory biology or zoology.

**ASI 315 Woody Plants.** May term. Taxonomy, ecology, management, and stewardship of trees and shrubs. Presents the systematic botany of local woody flora including identification by foliage, twigs, wood, and bark, and trees of major economic and ecological importance worldwide. Given in the context of ethical and global questions of deforestation, global warming trends, old growth forest values, lumbering, forest ecosystem restoration, and land stewardship.

#### *Summer Session I*

**ASI 301 Land Resources.** Summer I. Systems-level perspective on land forms and ecosystems. Includes analysis and interpretation of on-site data recorded in the field and remote-sensing data derived from satellite and low-altitude aerial imagery. Field trips to and analysis of forests, bogs, marshes, dunes, and rivers. Includes application to policy and land use planning. Prerequisite: one year of introductory science.

**ASI 303 Natural Resources Practicum: Ethnobotany and Ecological Agriculture.** Summer I. Environmental analysis and natural resources in relation to people and policy. The focus of 303 is on ethnobotany, ecological agriculture, and land stewardship. It employs a discussion format both in classroom and field settings. Its emphasis is tussling with difficult practical and ethical problems and issues that require deep and persistent thought. Enrollment in Natural Resources Practicum or Environmental Chemistry is required of all Au Sable Fellows.

**ASI 311 Field Botany.** Summer I. Field identification and ecology of vascular plants as components of natural communities in Michigan. Emphasis is placed upon on-site examination of plants in communities such as bog, dune, forest, marsh, meadow, and swamp. Plants difficult to study under field conditions are brought to the laboratory for dissection and identification. Ecological features such as community stratification and plant zonation along ecological gradients are examined. Prerequisite: one year of general biology or one semester of botany.

**ASI 321 Animal Ecology.** Summer I. The interrelationships between animals and their biotic and physical environments, including behavioral aspects. This is a field course which centers on the autecology of northern Michigan fauna from a stewardship perspective. Included are studies of a resident population of beavers. Prerequisite: one year of introductory science.

**ASI 322 Aquatic Biology.** Ecology, identification, systematics, culture, and care of aquatic plants and animals, and adaptations to freshwater environments. Aquatic life is studied in lakes, ponds, bogs, marshes, and streams and in the laboratory. The course assesses human impacts on aquatic species and ecosystems, presents procedures for the stewardship of aquatic habitats, and introduces aquatic restoration ecology. Prerequisite: one year of general biology or one semester each of general zoology and general botany.

**ASI 390 Directed Individual Study.** Summer I and II. Prerequisite: permission of instructor.

**ASI 471 Conservation Biology.** Principles of conservation biology with applications to sustainable human society and biospheric integrity. An integrative approach to biology and society that interrelates population biology, ecological principles, biogeochemical cycles, ecosystem functions, and human society in the context of biospheric degradation. The course develops a stewardship perspective rooted in biological principles and directed at conservation of plant and animal species, biotic communities, ecosystems, and human society. Included are topics of human development, poverty, and economic growth.

#### *Summer Session II*

**ASI 302 Limnology.** Summer II. Field study of lakes and streams with applications to planning and management. Includes an introduction to limnology and investigation of representative lakes and streams of the region. Prerequisite: one year of general biology and one year of general chemistry.

**ASI 304 Natural Resources Practicum: Global Development and Ecological Sustainability.** Environmental analysis and natural resources in relation to society and development issues. The focus of 304 is on ecological sustainability and sustainable society in the context of the various factors that are bringing environmental degradation and impoverishment of people and cultures. It deals with topics of tropical agriculture, hunger, poverty, international debt, appropriate technology, relief programs, missionary earthkeeping, conservation of wild nature, land tenure, and land stewardship. It employs a discussion format both in classroom and field settings. Its emphasis is grappling with difficult practical and ethical problems and issues that require deep and persistent thought. Enrollment in Natural Resources Practicum or Environmental Chemistry is required of all Au Sable Fellows.

**ASI 312 Insect Biology and Ecology.** Summer II. A study of insect taxonomy, ecology, life histories, and economic importance. Special attention is given to environmental stewardship issues including use of insecticides, biological control, integrated pest management, and impact of cultivation on formation of pest faunas. Field methods are

stressed. Prerequisite: one year of general biology or one semester of general zoology.

**ASI 332 Environmental Chemistry.** Summer II. Principles and analysis of chemical movement and distribution, both natural and man-induced, in natural environments. Sampling and analytical methods are included for water, soil, and air. work will be conducted both on site in natural habitats and the laboratory. Prerequisite: one year of general chemistry and one semester of either biochemistry or organic chemistry.

**ASI 342 Fish Biology and Ecology.** Summer II. Identification, ecology, exploitation and stewardship of fishes and their habitats. Field studies include non-commercial and commercial fisheries in the Great Lakes region, ecological dynamics of fisheries exploitation and population ecology, fishing techniques, and fishing rights and regulation.

**ASI 482 Restoration Ecology.** Summer II. Ecological foundations and techniques for ecosystem and biotic community restoration. This course applies ecological principles and environmental ethics to redeeming and restoring degraded and damaged ecosystems and endangered species. Field studies include analysis of restoration and rehabilitation work with the Kirtland Warbler, an officially designated wild river, coastal dunes, kettle-hole bogs, old growth forest, deforested lands, degraded residential and farming sites, and abandoned oil wells. A practical field laboratory is included in which techniques are applied to a specific site.

**ASI 390 Directed Individual Study.** Summer I and II. Prerequisite: permission of instructor.

### **CENTRAL COLLEGE PROGRAMS**

In cooperation with Central College, Calvin college offers semester- and year-long programs of foreign language study in China, France, Germany, Austria, Netherlands, and Spain which permit students to register for courses in a variety of subjects. Those who need language review may take a month-long intensive course in the country of their program before the beginning of the fall semester. English language programs are also available in London and Wales.

To be eligible for such programs, students must have a cumulative grade point average of 2.5 and the recommendations of two faculty members. Students should consult with the off-campus program director to apply.

### **CHICAGO METROPOLITAN CENTER PROGRAM**

The Chicago Metropolitan Center semester-long program is sponsored by Calvin College together with Central, Dordt, Hope, Northwestern, and Trinity Colleges and is administered by Trinity Christian College. It offers qualified juniors and seniors with a cumulative grade point average of at least 2.5 the opportunity to gain a semester's credit through studying and working in Chicago. Students participate in seminars at CMC's Loop Center and spend four days a week in an internship related to their career interest and academic major.

All students must take the Field Internship and select two of the three seminars available. Additional information and application forms may be obtained from the off-campus program director.

**Fine Arts Seminar.** F and S. An investigation of urban cultural life as reflected in the arts of Chicago. Data for exploration is gathered by attendance at plays, concerts, movies, and art galleries. This primary information is processed through readings, lectures, and classroom discussion. The seminar operates on the premise that art mirrors the ideas and values held by a particular society or civilization and that students can be helped to read this cultural mirror more effectively. Meets fine arts core.

**Metropolitan Seminar.** F and S. A broad survey of the major issues in the life of the metropolitan community of Chicago. The seminar treats the economic, educational, political, and social welfare systems. Also it examines the meaning of living in the urban environment, the nature of the relationship between the city and the suburbs, and the relations of national priorities to the quality of life in the urban centers.

**Values and Vocations Seminar.** F and S. An exploration of the values dimension in life, what one lives for and why. Emphasis is placed on helping students determine their

personal structure of values in the light of biblical norms. What is sought is a blueprint for an integrated life of Christian action and reflection.

**Field Internship.** F and S, two course units. Students enrolled in the Chicago Metropolitan Center program have a large number of placements available to them. Students may select internships from a range of organizations which include art centers, banks, businesses, hospitals, media centers, newspapers, publishing houses, mental health clinics, churches, social work agencies, museums, libraries, and zoos. Work internships demand high quality work and are supervised on the job by Metropolitan Center staff members.

### **DORDT NETHERLANDIC STUDIES PROGRAM**

This cooperative program with Dordt College is offered each spring semester in Amsterdam. It enables students to live with Dutch families for part of their stay and near the Free University of Amsterdam for the remainder. Prerequisite is a semester of college-level Dutch or its equivalent, sophomore status or higher, and a cumulative grade point average of at least 2.5. Students will complete their foreign language requirement by taking Dutch 203 at Calvin in the fall. The advisor is Mr. Martin Bakker.

A plan of study will be devised for each student from the following courses, of which only two may be used for language core credit:

- Elementary Dutch.
- Intermediate Dutch.
- Introduction to Modern Dutch Literature.
- Advanced Dutch.
- Dutch Art and Architecture.
- Practicum in Mission and Evangelism.
- Dutch Culture and Society.
- History of the Low Countries.
- Political Science of Dutch Society.
- Individual Study.

### **LATIN AMERICAN STUDIES PROGRAM**

Participants in the Latin American Studies Program, administered by the Christian

College Coalition, will live and study for a semester, either in the fall or spring, in Costa Rica. Patterned after the American Studies Program in Washington, D.C., the program is designed to expose students to the economic and political realities of the relationship between the United States and developing nations of Latin America, to increase sensitivity to the needs of Christians in the Third World, and to deepen understanding of the Lordship of Jesus Christ in an international context.

Applicants must be juniors or seniors, have a 2.75 or higher cumulative grade point average, and must receive a recommendation from a member of the Spanish department.

Students will study the Spanish language intensively, will take a course in Latin American history and culture, and will be involved in a service experience. For further information and application forms consult Mr. Roland Hoksbergen, Economics Department.

### **LOS ANGELES FILM STUDIES CENTER PROGRAM**

The Los Angeles Film Study Center (LAFSC) Program, offered in both the fall and spring semesters, is administered by the Christian College Coalition of which Calvin College is a member. The goal of the program is to prepare students for discerning participation with professional skill and Christian integrity in the film industry, including both the creative and administrative aspects.

Participants live in a supportive Christian community, located in the Hollywood area, to pursue faith-shaped study, involvement in, and critique of the film industry. The LAFSC program includes visits to studios and production locations, a film screening series, a guest presentation series, an internship, a production product, all within the context of the following academic courses:

**Inside Hollywood: The Work and Working of the Film Industry** (2 credit units)

**Keeping Conscience: Ethical Challenges in the Entertainment Industry** (1 credit unit)

**Film Culture: Exploring a Christian Perspective on the Nature and Influence of Films** (1 credit unit)

Applicants must be juniors or seniors with a 2.75 or higher cumulative grade point average who provide evidence of academic, creative, and personal maturity in their application, recommendations, and interview with the LAFSC Director. Further information and application forms may be obtained from Mr. Roy Anker of the English Department.

### **MIDDLE EAST STUDIES PROGRAM**

Participants in the Middle East Studies Program, administered by the Christian College Coalition, will live and study for a semester, either in the fall or spring, in Cairo, Egypt. The last two weeks of the semester are spent in Israel. Serving as the Middle East Campus, the MESP is committed to deepening the students' understanding of the Lordship of Christ in an international context. The academic components of the program are:

**Introduction to Colloquial Arabic**

**Peoples and Cultures of The Middle East**

**Islam in The Modern World**

**Conflict and Change in The Middle East Today**

Applicants must be juniors or seniors, have a 2.75 or higher cumulative grade point average, and must receive a recommendation from the academic dean's office. For further information, consult Mr. D. Howard, History Department.

### **OREGON EXTENSION PROGRAM**

This cooperative program is conducted in Ashland, Oregon, during the fall semester. About thirty students become part of a small, intellectual community in a quaint rural setting. Instruction is personalized in tutorial or small groups. The focus is on Christian reflection on contemporary life and thought. Students study one course in each of the following categories: Modern Visions of Human Nature; Science and Technology in the Modern World; Modern Visions of Society; and Religion and Modern Life. More than half of the academic work must be outside students' primary field of interest. Credit is issued by Houghton College, Houghton, New York.

Applicants ordinarily should plan to take the program in their junior or senior year, have a grade point average of 3.0 or higher, and show promise of benefiting from tutorial and small group study and discussion. Details about the program are available from Mr. David Diephouse of the History Department.

### **RUSSIAN STUDIES PROGRAM**

Participants in the Russian Studies Program, administered by the Christian College Coalition, will live and study, either in the fall or spring, in three strategic settings in Russia. After a two week orientation in Moscow, the program moves to Nizhni Novgorod (formerly Gorky), Russia's third largest city (10 weeks). The last 2 weeks of the semester are spent in St. Petersburg, where students live with Christian families and will be involved in a two-week service project. The academic components of the program are:

**Introduction to The Russian Language**

**Russian History and Culture**

**Post-Communism Russia in Transition**

**Service Project**

Applicants must be juniors or seniors, have a 2.75 or higher cumulative grade point average, and must receive a recommendation from the academic dean's office. For further information consult Mr. Frank Roberts, Academic Dean.

### **SEMESTER IN BRITAIN PROGRAM**

Calvin College offers a study program each spring semester in cooperation with Oak Hill College in London. Oak Hill College is a theological college located in northern London. Calvin College students live in the college dormitories, have meals in the dining room, and worship in daily chapel services with the Oak Hill students and staff. Calvin students take the equivalent of four courses during the semester—two with the Calvin College professor who directs the program and two courses selected from the offerings of Oak Hill College. For spring 1995, the director is Mr. Ronald Wells, who will teach **Themes in British and American History** (STBR 219). The courses from the Oak Hill curriculum include offerings in biblical and theological studies, church history, ethics,

psychology, and sociology.

To be accepted into the program, students must have completed one year of college studies with a minimum cumulative grade point average of 2.5. Selection of students will be based on appropriateness of the study to the applicant's college program, class level, and recommendations.

Information on the 1995 program is available from Mr. Ronald Wells, History Department.

#### **SEMESTER IN HUNGARY PROGRAM**

Calvin College offers a study program each fall semester in cooperation with Raday College, the Reformed theological school of Budapest, and Budapest University of Economic Sciences, a university for the social sciences and humanities. The institutions are located on the Danube in the heart of Budapest. Calvin students may register for a number of core and elective courses in history, sociology, psychology, economics, religion and theology, and business. Calvin students take their normal course load while in Budapest: two courses from the Calvin College professor who accompanies and directs the semester, and the remainder from the cooperating institutions. For Fall 1994, the director is Kurt C. Schaefer, who will teach **Post-socialism in Eastern Europe** (Economics 336) and **Studies in Eastern**

#### **European Culture** (IDIS 312).

To be accepted into the program, students must have completed one year of college studies with a minimum cumulative grade point average of 2.5. Selection of students is based on appropriateness of the study to the applicant's college program, class level, and recommendations. Information on the program is available from William Stronks, Director of Off-Campus Programs.

#### **STUDY IN SPAIN PROGRAM**

Calvin offers introductory and advanced Spanish language programs each spring semester in Denia, Spain. Students live with Spanish families and attend classes at the local university.

In the introductory program, students earn credit for Spanish 101, 102, 201, and 202. Because enrollment is limited, preference is given to upperclass students who are maintaining a cumulative average of at least 2.5. For the advanced program, Spanish 202 or its equivalent is a prerequisite. Students select four courses from Spanish 301, 302, 330, 331, and 353. Preference is given to students who are maintaining a cumulative grade point average of 3.0 or better.

Complete information and application forms are available in the Spanish Department or from Ms. Miriam Driscoll who is director for 1995.

## **PHILOSOPHY**

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*Professors C. S. Evans, L. Hardy, J. Hare, D. Hoekema, K. Konyndyk, G. Mellema (acting chair, fall semester), D. Ratzsch\*, S. Wykstra\*\*, L. Zuidervaart\*, (chair, spring semester)*  
*Associate Professor K. Clark*  
*Assistant Professor S. Davison, D. Reiter*

The department offers a major concentration appropriate for various careers, including professions such as higher education, law, the ministry, and government service. It consists of eight courses including Introduction to Philosophy (153), one course in logic, two historical period courses (251–252), an advanced historical course, two systematics courses (one of which must be from the advanced level), and an elective. In addition, single majors are required, and double majors are encouraged, to take the Philosophy Seminar (395). The single major is also required to take a four-unit cognate in another department that is approved by the departmental advisor.

A minor concentration consists of 153; 171 or 173; 251 and 252; and two philoso-

phy electives. Students with special interests, or who may wish to modify these minor requirements, should consult the department chair.

Students who wish to present one course toward the core requirement in philosophy should take 153. Those who wish to present two courses should take 153 and 171, 173, or any intermediate or advanced level course; or, for those in teacher education, 153 and 209 or Education 304.

### ELEMENTARY COURSES

153 **Introduction to Philosophy.** F and S, core. A one-semester introduction to philosophy which aims to give the student a Christian philosophical framework, along with some awareness of important alternative philosophical perspectives. *Staff.*

171 **Introduction to Logic.** F and S. A course in elementary deductive and inductive logic with emphasis upon the use of logic in evaluating arguments. Suitable for first-year students; not recommended for students aiming toward graduate study of philosophy. *Mr. S. Davison, D. Ratzsch.*

173 **Introduction to Symbolic Logic.** S. A course in elementary symbolic logic, including some modal logic. This course is recommended especially for science and mathematics majors, and for those intending to study philosophy on the graduate level. Open to qualified first-year students. *Mr. K. Clark.*

### INTERMEDIATE SYSTEMATIC COURSES

*All intermediate courses presuppose one course in philosophy and (after 153) satisfy core.*

201 **Philosophy of Social Science.\*** A study of philosophical problems arising out of the methods and results of the social sciences. Not offered 1994–95.

202 **Philosophy of Law.\*** S. A consideration of such topics as: the nature and types of law; sources of law; and the basis of a legal system, of legal and political authority, of obedience to law, and of human rights. *Staff.*

203 **Philosophy of Physical Science.\*** S. A study of philosophical problems arising out of the methods and results of the physical sciences. *Mr. D. Ratzsch.*

204 **Philosophy of Religion.\*** F. A study of some philosophical questions arising from religious belief. *Mr. K. Clark.*

205 **Ethics.\*** F and S. A course designed to deal both historically and situationally with the persistent problems of the moral life. *Mr. J. Hare.*

207 **Political and Social Philosophy.\*** S. A historically-oriented study of the problems of social and political thought, with emphasis on political and social ideals such as justice; equality and the law; the basis of authority; rights and obligations. *Mr. L. Hardy.*

208 **Aesthetics.\*** F and S. A study of the nature of art and aesthetic judgments. *Mr. L. Zuidervaart.*

209 **Philosophy of Education.** S. A study of the nature, aims, and principles of education. *Mr. G. Mellema.*

211 **Philosophy of Gender.\*** A study of the ways in which feminist theory and the newer "men's studies" interact with traditional topics in philosophy. Particular attention will be paid to research and theory concerning men's vs. women's moral reasoning, questions about group vs. individual rights, feminist theorizing on human nature and the nature of knowledge, and the impact of gendered theorizing on religious thought. Not offered 1994–95.

### INTERMEDIATE HISTORICAL COURSES

*All intermediate courses presuppose one course in philosophy and (after 153) satisfy core.*

251 **History of Philosophy I.\*** F and S. A survey of the major Western philosophers and philosophical movements of the ancient and medieval periods. *Mr. S. Davison.*

252 **History of Philosophy II.\*** F and S. A survey of some of the major Western philosophers and philosophical movements from the seventeenth century to the present. A continuation of 251, which is a recommended preparation. *Mr. L. Hardy, Mr. C. S. Evans.*

## ADVANCED HISTORICAL COURSES

All advanced courses presuppose two or more philosophy courses, or one philosophy course plus junior or senior standing. All satisfy core (after 153).

312 **Plato and Aristotle.**\* Advanced study of Plato and Aristotle. Not offered 1994-95.

322 **St. Thomas Aquinas.**\* S. An intensive study of selected passages from Aquinas' *Summa Theologiae* dealing with the topics of God, human knowledge, and virtue. *Staff*.

331 **Kant.**\* A study of the Critique of Pure Reason. Not offered 1994-95.

333 **Kierkegaard.**\* F A study of selected philosophical works of Kierkegaard, focusing primarily on his philosophy of religion. *Mr. C. S. Evans*.

334 **Marx and Marxism.**\* A critical study of the thought of Karl Marx and his most important interpreters. Not offered 1994-95.

335 **Nineteenth Century Philosophy.**\* A study of some major figures in nineteenth century continental European philosophy. Not offered 1994-95.

336 **Studies in Modern Philosophy.**\* F A study of major European rationalist thinkers of the seventeenth and eighteenth centuries. *Mr. S. Wykstra*.

340 **Twentieth-Century Continental Philosophy.**\* S. A study of major figures in phenomenology and existentialism. *Mr. L. Hardy*.

## ADVANCED SYSTEMATIC COURSES

365 **Ethical Theory.**\* An examination of the concepts of moral obligation and moral responsibility, with special emphasis upon collective responsibility, supererogation, and the divine command theory. Not offered 1994-95.

371 **Epistemology.**\* S. A study of the nature, sources, types, and limits of human knowledge. *Mr. D. Reiter*.

375 **Philosophical Anthropology.**\* F A critical examination of major philosophical discussions of the nature of human existence, with special attention to selected topics such as gender, culture, society, mind, and body. *Mr. C. S. Evans*.

378 **Philosophy of Language and Interpretation.**\* S. A study of the nature and sources of language, and of the most prominent theories and methods of interpretation. Special attention will be given to the basis in philosophies of language for recent controversies in linguistics and literary criticism. *Mr. L. Zuidervaart*.

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. *Staff*.

383 **Metaphysics.**\* A study of selected topics of metaphysics. Not offered 1994-95.

390 **Readings and Research.** F, I, S. Prerequisite: permission of chair. *Staff*.

395 **Philosophy Seminar.**\* F An advanced seminar on topics of current interest in philosophy, culminating in the preparation and presentation of a research paper. Prerequisite: three courses in philosophy. *Staff*.

## GRADUATE COURSES

501 **The Educational Enterprise: A Philosophical Perspective.** F, Summer. An examination of factors presently operative in the educational enterprise from the perspective of the history of Western philosophy. *Mr. G. Mellema*.

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

## JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **Bad Stuff Happens: New Light on the Problem of Evil.** *Mr. S. Wykstra*.

W11 **Richard Rorty—The Philosopher Who Would Disown His Discipline.** *L. Hardy*.

W50 **The Arts and Cultural Politics.** *L. Zuidervaart*.

PHIL 209 **Philosophy of Education.** *G. Mellema*.

PHIL 390 **Independent Study at Labri Fellowship, Switzerland.** *L. Hardy*.

# PHYSICAL EDUCATION AND RECREATION

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Professors G. Afman, R. Honderd, N. Meyer, J. Timmer, G. Van Anandel, D. Vroon,  
D. Zuidema, M. Zuidema

Associate Professors E. Douma, M. Schutten (chair)

Assistant Professors D. Bakker, J. Pettinga

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, exercise scientists, athletic trainers, and recreation leaders; and it directs an extensive program of intramural, recreational, and intercollegiate sports for men and women. Recreation (B.S.R.)

Admission to any of the major concentrations requires the approval of the department chair. The general nine-course major leading to a Bachelor of Arts degree in physical education requires 201, 212, 213, 220, 301, 315, 325, and 332 W plus two course credits from courses numbered 200 and above.

For those students interested in exercise science, the general major sequence is required, plus a seven-course science cognate consisting of Biology 131, 205 and 206; Chemistry 113 and 114; Physics 223; and Mathematics 143. Students selecting a concentration in exercise science should plan to enter graduate school to complete their specialization. Students interested in sports medicine and athletic training are required to take the exercise science major concentration plus complete 255, 265, and 355. Such students are also asked to work towards completion of clinical hours required for NATA (National Athletic Trainers Association) certification by being a student athletic trainer under Calvin's certified athletic trainer. Students interested in the sports medicine program are asked to consult Mr. James Timmer; for the exercise science program they should see Mr. Gregg Afman.

The nine-and-one-half course teacher education major with K-12 endorsement requires 201, 212, 213, 220, 301, 302, 305, 306, 325, 332 W, and 380. This program requires the approval of the Education Department and the approval of one of the departmental advisers, either Mr. Marvin Zuidema or Mr. Jeffrey Pettinga. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department.

Students who wish to minor in physical education teacher education may choose from three areas of concentration. A secondary teacher education minor requires six courses: 212, 220, 302, 306, 325, 332, and a half course credit in 380. The elementary teacher education minor is 212, 220, 302, 305, 325, 332, and one-half course credit in 380. A teacher education minor with a coaching emphasis requires 212, 220, 255, 315, 325, 380, and two course credits from the 230 series.

The required course units for the major in recreation are met by 201, 215, 301, 303, 304, 305, 310 W, and 346. The four required cognate courses include Social Work 250; Psychology or Sociology 310; Physical Education 220 and one unit from Physical Education 221 or 222, and 380. The professional program also includes a four course interdisciplinary emphasis in a specific subspeciality area. These courses need the approval of the Recreation program advisor. Students who wish to pursue professional

certification in therapeutic recreation (recreation therapy) are also required to take Recreation 314 and 324. (See model program on pages 88-89.) The program in recreation leads to a Bachelor of Science in Recreation and requires the approval of the recreation advisor, Mr. Glen Van Andel.

The liberal arts core requirement in physical education is met by taking 104 (Perspectives); one quarter course from those numbered 110-124 (Health Fitness Courses); and the remaining two quarter courses from 125-149 (Competitive Sports), 150-179, (Recreation Sports and Dance), or 180-199 (Special Emphasis Courses). Physical Education 221, 222, and courses from the 230 series or 240 series may be substituted for one of the courses in the 125-186 series. Although students may take courses in addition to these, only one course unit of credit may be applied to the minimum graduation requirements.

**PHYSICAL EDUCATION COURSES**

104 **Physical Education Perspectives.** F and S, quarter course. Required of all students. This course covers topics dealing with a Christian perspective on physical education. A survey of positive health practices in health fitness, including cardiovascular and muscular physiology, nutrition, body composition, and stress management. Also included are lectures on play, leisure, recreation, and sports in a contemporary society. The course involves lectures, laboratories, discussions, and exercise sessions. *Staff.*

110-124 **Health Fitness.** F and S, quarter credit. Required of all students. The courses listed in this series have as a primary goal physical conditioning. Courses are either concerned with aerobic cardiovascular conditioning or the development of efficient muscular function. Prerequisite: 104.

- 110 Aerobic Jogging
- 111 Aerobic Aquatics
- 112 Aerobic Dance
- 113 Aerobic Basketball
- 114 Weight Training
- 115 Aerobic Cycling
- 116 Aerobic Activities
- 117 Therapeutic Activities (individual prescription)
- 118 Weight Management

125-149 **Sports Education.** F, I and S, quarter credit. The courses listed in this series include team and individual sports popular in the American society. The course's primary goals are skill development and participation. In certain courses personal equipment is needed to enroll in the courses. Some courses meet off-campus. \* Prerequisite: 104.

- 125 Volleyball I
- 126 Volleyball II
- 127 Soccer
- 128 Softball
- 131 Badminton I
- 132 Badminton II
- 134 Golf I\*
- 135 Golf II\*
- 137 Racquetball I\*
- 138 Racquetball II\*
- 139 Tennis I
- 140 Tennis II
- 144 Fencing
- 145 Ice Hockey\*

150-179 **Recreational Sports and Dance.** F, I and S, quarter credit. The courses listed in this series have as their primary goals skill development and participation. The activities generally have greater lifetime recreational value. Some courses meet off-campus. \* Prerequisite: 104.

- 150 Downhill Skiing\*
- 151 Cross Country Skiing
- 152 Bowling\*
- 153 Wallyball
- 154 Orienteering
- 155 New Games
- 156 Aquatic Games
- 158 Swimming II
- 160 Modern Dance I
- 161 Modern Dance II
- 162 Ballet I
- 163 Ballet II
- 164 Jazz I
- 165 Jazz II
- 166 Tap I
- 167 Tap II
- 168 Sacred Dance
- 170 Square Dance

172 Gymnastics — tumbling  
173 Gymnastics — apparatus  
174 Skating\*  
176 Life Guard Training  
177 Water Safety Instruction  
180–199 **Special Emphasis Courses.** F, I, and S, quarter credit. The courses listed in this series are offered to attempt to meet the special needs of students. Students may select a course from this group based on interest or academic program. PE 221, 222 and 230 courses can substitute for a quarter core credit.

180 Swimming I (non-swimmers)  
181 Scuba Instruction  
183 First Aid Practicum  
184 Sports Officiating  
185 Self Defense—Women  
186 Karate  
221 Elementary School Activities  
222 Elementary School Health Education Activities  
230-238 Coaching of Sports

201 **Historical and Sociological Foundations of Physical Education, Recreation, and Sport.**\* F A study of physical education, recreation, and sport in the context of their history and development as well as an overview of their role in, and significance to, contemporary society. *Mr. J. Pettinga.*

212 **Anatomical Kinesiology.** F A study of human motion based on structural foundations. Particular attention is given to bone, joint, muscle, connective and nerve structures, and the movement patterns specific to these structures. An analysis of efficient anatomical movement patterns for locomotor, manipulative, and sport skills are studied in the course. Prerequisite: Biology 115. *Mr. J. Timmer.*

213 **Mechanical Kinesiology.** S. An investigation into the physical laws of motion and how these laws apply to the human body and to objects projected by the human body. Specific sports skills are analyzed with respect to both kinematics and kinetics. Students determine efficient movement patterns for sports skills based on the mechanical principles studied in the course. Prerequisites: 212 and Physics 223. *Ms. N. Meyer.*

215 **Physical Education for Persons with Special Needs.** S. Philosophy and basic con-

cepts relating to planning and conducting programs in community settings for individuals with disabilities. Concepts and techniques in program planning, leadership and adaptation of facilities, activities and equipment in recreation and physical education services for individuals with special needs are reviewed and discussed. Prerequisites: Physical Education 201 or permission of the instructor. *Mr. J. Timmer.*

220 **Motor Learning and Skill Performance.** F This course in the psychology of learning, particularly motor learning, emphasizes theory formation and empirical strategies. It includes an examination of the various characteristics of the learner, an attempt to develop specific theories of how motor skills are acquired, and a review of teaching strategies that are appropriate for teaching them. The focus is on the learner, the learning process, and methods of instruction and includes an evaluation of growth and the developmental factors influencing learning. The course gives opportunities for practical experience in applying motor learning principles. *Ms. M. Schutten.*

221 **Elementary School Activities and Programs.**\* F and S, half course. The course provides a working knowledge of the fundamentals of physical education planning for elementary school children. It substitutes for one-quarter course in basic physical education (110–199) for physical education majors and minors and for elementary teacher education students. This course is required of all elementary education students. *Mr. M. Zuidema, Mr. J. Pettinga.*

222 **Elementary School Health Education Program and Activities.** F and S, half course. The course provides a working knowledge of the fundamentals of health education planning for elementary school students. Particular attention is given to curriculum sequence, resource materials, and learning activities. The course is required of all elementary education students. It can substitute for one-quarter credit physical education core. *Ms. D. Bakker, Ms. N. Meyer.*

230–238 **The Coaching of Sports.** Half courses. Students with a minor concentration in physical education must take two of these courses. Other college students with

an interest in coaching are encouraged to elect courses in this series. Prerequisite: a record of participation in skill performance or completion of the same activity in 380.

230 Field Hockey. F Ms. D. Zuidema. Not offered 1994-95.

231 Basketball. F Mr. E. Douma.

232 Baseball / Softball. S. Mr. J. Pettinga. Not offered 1994-95.

233 Track and Field. S. Mr. R. Honderd.

234 Soccer. F Mr. M. Zuidema.

235 Volleyball / Tennis. S. Ms. M. Schutten, Mr. D. Vroon. Not offered 1994-95.

236 Football. F Mr. J. Pettinga. Not offered 1994-95.

238 Wrestling. F Mr. J. Pettinga. Not offered 1994-95.

240-243 **Teaching of Activities.** F and S, half courses. A study of the basic principles, terminology, skills, and strategies involved in various educational sports activities and the methods and materials that are appropriate for incorporating these activities into physical education programs. Lectures, discussions, demonstrations, laboratory experiments, and student presentations. Prerequisites: completion of a basic physical education course in the activities to be studied, credit for the activities in 380, or competence in the sports. All students who have not completed two 240-243 courses must take PE 305 and 306 instead of the 240 courses.

240 Teaching of Gymnastics and Rhythmics. S. Mr. J. Pettinga, Ms. E. Van't Hof. Not offered 1994-95.

241 Teaching of Team Sports. F Mr. D. Vroon, Mr. M. Zuidema. Not offered 1994-95.

242 Teaching of Aquatics, Track, and Weight Training. S. Ms. M. Schutten, Mr. R. Honderd. Not offered 1994-95.

243 Teaching of Racquet Sports and Golf. F Ms. D. Zuidema. Not offered 1994-95.

255 **Sports Medicine: Basic Athletic Training.** S. This course was formerly called Physiology of Conditioning and Injuries (PE 312). The course covers physiological principles as they apply to physical conditioning and rehabilitation from injuries. Specific types of conditioning programs and general first aid techniques are studied. Laboratory topics include injury evaluation and taping tech-

niques. This course is required for those taking the Exercise Science Major with Athletic Training Emphasis. Prerequisites: Biology 115, or equivalent, and PE 212. Mr. J. Timmer.

265 **Dimensions of Human Health.** S. This course is designed to serve as a survey introduction to human health. The study covers personal health topics including nutrition, weight control, stress, and health fitness. Special emphasis is given to the areas of drug use and abuse and communicable diseases. The course studies life cycles and community health issues, the identification of health problems, and the programming for prevention. Exercise Science Majors with the Athletic Training Emphasis must take this course while other physical education majors are urged to elect this course. Prerequisite: Biology 115 or equivalent. Ms. M. Schutten.

301 **Measurement and Evaluation in Physical Education and Recreation.** \* S, half course. A study of the evaluation techniques and principles in physical education. The emphasis is 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 covers basic descriptive statistics and statistical research understanding. 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. Adaptive physical education programs and mainstreaming are also covered. Opportunity is given to construct total programs of physical education for selected schools. Mr. M. Zuidema.

305 **Instructional Methods for Elementary Physical Education.** F. A study of basic knowledges, skills, and strategies involved in the various educational activities appropriate for elementary school physical education programs. This course focuses on methods and resources for the elementary

school curricula. Course includes lectures, discussions, demonstrations, laboratory teachings, student presentations, and resource material compilations. Pre-requisites: PE 220 (Motor Learning) and PE 302 (Curriculum and Programs in Physical Education). *Mr. M. Zuidema, Ms. Ellen Van't Hof.*

**306 Instructional Methods for Secondary Physical Education.** S. This course focuses on methods and resource materials appropriate for secondary school physical education programs. Coverage includes team sports, individual and dual sports, fitness building activities, advanced gymnastic and creative movement activities, recreational sports activities, and adaptive activities. The course includes lectures, discussions, demonstrations, laboratory teachings, student presentations, and compilation of resource materials. Prerequisite: PE 220 (Motor Learning) and PE 302 (Curriculum and Programs). *Mr. J. Pettinga, Ms. D. Zuidema.*

**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: Biology 115 or equivalent. *Mr. G. Afman.*

**332W Philosophy of Physical Education and Sport.** F, half course. This course introduces the student to the philosophical reflections in physical education and sport and examines existing theories about physical education and sport in society. Prerequisites: 201, Philosophy 153, or 151 and 152, junior status. *Mr. J. Timmer.*

**355 Sports Medicine: Advanced Athletic Training.** S. The course covers physiology,

prevention, recognition, treatment, and rehabilitation of athletic injuries with an emphasis on advanced evaluation techniques, physical agents used in the treatment of athletic injuries, and therapeutic exercises used for prevention and rehabilitation. Lecture and laboratory time are divided equally in the course. The course is required of all Exercise Science Majors with an Athletic Training Emphasis. Prerequisites: Biol. 115, PE 212, PE 255. *Mr. J. Timmer and professional staff.*

**359 Seminar in Principles and Practices of Physical Education Teaching.** F, S. The seminar deals with perspectives and methods of teaching physical education. This course should be taken concurrently with Education 346: Directed Teaching. Before taking this course, students must be admitted into Directed Teaching by the Education and Physical Education Departments. Students must complete the physical education major prior to student teaching. Fifth year and transfer students with special needs may seek departmental authorization to do directed teaching during the first semester. *Mr. M. Zuidema, Mr. J. Pettinga.*

**380 Individual Competences.** F, S, half course. This course offers opportunity for physical education and recreation majors and minors to develop the physical condition and skill necessary to be beginning teachers or leaders in physical education or recreation. Students are assessed on their skill competence in a variety of fitness and sport activities, and are required to complete fitness and sport classes in activities in which minimal skill competence is not demonstrated. Teaching, administrative, and professional building competences are also required. Students should register for this course with the instructor when they are admitted to a major or minor in the department and remain active until all the requirements are completed. The assessment inventory is given every fall. *Mr. E. Douma.*

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

#### RECREATION COURSES

**201 Historical and Sociological Foundations of Recreation and Sport.\*** F A study of recreation and sport in the context of their history and development as well as an over-

view of their role in, and significance to, contemporary society. *Mr. J. Pettinga.*

**215 Recreation for Persons with Special Needs.** S. Philosophy and basic concepts relating to planning and conducting programs in community settings for individuals with disabilities. Concepts and techniques in program planning, leadership and adaptation of facilities, activities and equipment in therapeutic recreation services for individuals with special needs are reviewed and discussed. Prerequisites: Recreation 201 or permission of the instructor. *Mr. J. Timmer.*

**301 Measurement and Evaluation in Physical Education and Recreation.** See PE 301.

**303 Leadership in Recreation Programs.** S, half course. This course studies the organization of recreation programs and gives opportunity for observing programs in action, for structuring new programs, and for developing leadership skills. *Ms. D. Zuidema.*

**304 Management of Leisure Services.** S. A study of the principles, policies, theories and procedures involved in the organization and administration of leisure services in a variety of settings. *Mr. G. Van An del.*

**305 Program Planning and Development.** F A study of the principles and techniques of recreation program development. The application of a program development model which is used in the organization and planning of recreation programs is emphasized. Use of selected computer software programs for program administration and promotion will also be developed. *Mr. G. Van An del.*

**310 W Theory and Philosophy of Leisure.** F A study of the theories and philosophies of work, recreation, and leisure that influence contemporary culture. Emphasis is placed on the development of a Christian perspective on work, recreation, and leisure and its implications for professional practice. *Mr. G. Van An del.*

**314 Principles of Therapeutic Recreation.** F, alternate years. An introduction to the history, philosophy, and concepts of therapeutic recreation. An orientation to the role and function of therapeutic recreation personnel in the treatment of persons with psycho-

logical impairments, physical impairments, developmental impairments, pediatric illnesses, and the problems of aging are presented. Prerequisites: Recreation 215, Recreation for Persons with Special Needs, or permission of the instructor. *Mr. G. Van An del.* Not offered 1994-95.

**324 Therapeutic Recreation Practice.** F, alternate years. An introduction to the basic methods and techniques used in the delivery of therapeutic recreation services. Skills in interpersonal and helping relationships are reviewed and practiced in the context of their application to specific treatment approaches including leisure counseling, play therapy, physical confidence classes, stress-challenge, and physical fitness programs. Prerequisites: 215 and 314, or permission of the instructor. *Mr. G. Van An del.*

**346 Field Internship and Seminar.** S and SS, three course units. This course involves a one-semester field experience in a recreation service or agency. The seminar focuses on the problems and issues involved in relating classroom learnings to professional practice. Prerequisites: completion of all courses in the recreation program, a minimum cumulative average of C (2.0), and the approval of the department. *Mr. G. Van An del.*

#### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

PE Core: Weight Training, Volleyball, Badminton, Racquetball, Skiing, Square Dancing.

**W10 Application of Psychology to Athletics and Physical Education.** *N. Van Noord.*

**W11 Sport History: A Case Study on Professional Athletes.** *J. Timmer.*

**IDIS W17 The Science of Sports.** *N. Meyer, J. Van Zytveld.*

**IDIS W26 ...and a Time to Dance.** *E. Van't Hof.*

**IDIS W30 Christian Perspectives on Work and Vocation.** *G. Van An del.*

**IDIS W31 Sports and the Mass Media.** *J. Pettinga.*

# PHYSICS

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Professors R. Griffioen (chair), S. Haan, A. Kromminga, S. Steenwyk, D. Van Baak,  
H. Van Till, J. Van Zytveld

Students intending to major in physics are advised to enter college with four years of mathematics and to take their required courses in mathematics (Mathematics 161, 162, 231, 261) and physics (Physics 123, 124, 181, 182, 225, 226) during their freshman and sophomore years. Computer Science 141 is also recommended for the first semester of the freshman year. Students may apply for admission to the department before completing 226 and Mathematics 231, but they must have completed the designated courses with a minimum average grade of C (2.0) before they can be admitted to the major program.

The major program of concentration in physics consists of a total of nine courses, including the required basic physics courses listed above. Each student's program of concentration must be approved by the department and must include an appropriate distribution of theory and laboratory courses as well as cognate courses in mathematics. Physics majors who are juniors or seniors should enroll in Physics 195 each semester, and are also expected to attend Physics Department seminars.

Students planning to pursue graduate study in physics should take, in addition to the introductory courses, 280, 335, 345, 346, 365, 375, 376, a minimum of a half course credit of 382, 395 and 396 or an interim course in research, and Mathematics 333.

The secondary education major in physics requires a total of 12.0 course units in natural science. At least 8.0 course units are required in Physics: 123, 124, 181, and 182, or 126 and 186; 225; 226; 280; one advanced theory course from 335–379; a half course unit of 382, a half course unit of 390 involving a topic appropriate for students planning to teach high school physics; and approved electives from 196 and advanced physics courses. Participation in either 195 or 196 is expected of all juniors and seniors. Also required are Astronomy 201 or Geology 331; Chemistry 103 or 105; an approved Biology course; and a fourth course to be approved from Chemistry, Biology, or Geology/Earth Science. One from IDIS 210 and Philosophy 203 is also recommended. Student teaching is offered only in the spring semester. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department. The advisor for this program is Mr. John Van Zytveld.

A physics-computer science group major consists of 126, 186, 225, 280, and 385 (123, 124, 181, and 182 may be substituted for 126 and 186); Computer Science 151, 152, 253, and one from 245, 353, 375, or an approved interim; Mathematics 161, 162, 231 or 255, and 261; and additional approved courses to provide a minimum total of six courses in either physics or computer science.

The teaching group major in physics and chemistry consists of Physics 123, 124, 181, 182, 225, 226; Chemistry 103–104 or 105–201, and either 253–254 or 261–262; two and a half courses of approved electives from among those listed as Physics or Chemistry, and either Physics 196 or Chemistry 396. Courses recommended for such electives include Physics 280, 382, Chemistry 201, 304 or 317, and 396. In addition, Biology 115 or 131 (recommended), and one course from Astronomy 201, Geology 151, Geography/IDIS 250 and Geology 331 are required cognates. The advisors for

such programs are the chairs of the two departments.

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

A six-course minor, which is also appropriate for teacher education, consists of 123, 124, 181, 182, 225, 226, a half-unit of 382, plus one and a half course units approved by the department chair.

The physical science core requirement may be met by 110, 111, 126, 221, 223, or the combination of 212 and IDIS 213. Students preparing to be elementary teachers must take either 111 or 212 as their second course of the three-course requirement in natural science, and can take any of 111, 112, or 212 as their third course.

### INTRODUCTORY COURSES

**110 Physical Science.** F, core. This course evaluates the basic assumptions used in the scientific study of nature, discusses the methods of scientific investigation and the development of scientific theories, and presents the results of scientific investigations in the fields of physics and chemistry. It also acquaints students with the fundamental laws of physics and chemistry and explains certain important physical phenomena. This course is designed primarily for non-science majors and is not open to those who have taken or plan to take 111, 123, 126, or 221. Laboratory. Prerequisites: high school algebra and Mathematics 100, 221, or the equivalent. *Mr. A. Kromminga.*

**111 Observational Astronomy and the Science of Motion.** F and S, core. This course traces the development of ideas concerning motion and the structure of the cosmos from ancient times through the emergence of modern science in the sixteenth and seventeenth centuries. The apparent motions and behaviors of the stars, sun, moon, planets, and of terrestrial objects are all examined, and the ideas explaining these motions are considered from a historical perspective. The course has a strong laboratory emphasis, and pays particular attention to the processes involved in scientific investigation and in the nature and development of scientific understanding. Aspects of this course are designed specifically for prospective elementary edu-

cation students, and the course should be taken by students considering the elementary education program. Not open to those who have taken or plan to take 110, 123, 126, 221, or 223. Prerequisites: a year of algebra and a year of geometry in high school. Elementary education students who have taken high school physics may wish to substitute Physics 212 for this course in their program. *Mr. J. Van Zytveld, Mr. S. Steenwyk.*

**112 Physical and Earth Science for Elementary School Teachers.** S. This course uses a laboratory based approach in surveying topics in physics, chemistry, and earth science that are relevant for teaching in the elementary schools, but which are not covered in Physics 111. The course is designed to give prospective teachers background knowledge and experiences that will help them to teach hands-on science effectively. Topics covered include energy, sound, optics, electricity and magnetism, the structure of matter, chemical and physical changes, meteorology, oceanography, and the structure and development of the earth's crust. Not open to students who have taken or plan to take Physics 110 or 212. *Mr. S. Haan.*

**123 Introduction to Modern and Classical Physics.** F, half course. This course, along with 124, serves as an introduction to both classical and modern physics for students planning to major in science or mathematics. Mathematically qualified students are encouraged to satisfy the core requirement

with 123–124 rather than with 110. Topics in classical physics include mechanics and thermodynamics. The nature of scientific study in general and its place in one's world and life view are 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. *Mr. D. Van Baak.*

**126 Introductory Physics: Mechanics and Heat.** S, core. 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. *Mr. A. Kromminga, Mr. R. Griffioen.*

**195 Physics Student Seminar.** F and S, no credit. A seminar course featuring student and faculty presentations on topics relating to new developments in physics, to science, technology, and society issues, and to ethical issues related to physics. Junior and senior physics majors must attend each semester; freshmen and sophomores intending to major are encouraged to attend. By meeting stated requirements in this non-credit course, students can receive an honors designation in another concurrent 100- or 200-level physics course. *Mr. S. Steenwyk, Mr. J. Van Zytveld.*

**196 Physics Student Seminar.** F and S, quarter course. A seminar course featuring student and faculty presentations on topics relating to new developments in physics, to science, technology, and society issues, and to ethical issues related to physics. Both reading and laboratory topics are available for study and discussion. Students may not register for 195 and 196 concurrently. This course may be repeated up to two times, for

a total of 0.75 course units credit. *Mr. S. Steenwyk, Mr. J. Van Zytveld.*

**212 Physics for Elementary and Middle School Teachers.\*** F, alternate years. (The combination of this course with IDIS 213 satisfies physical science core.) A continuation of Physics 111, this course uses a laboratory based approach in surveying topics in physics that are relevant for teaching in the elementary and middle schools, but which are not covered in 111. The course is designed to give prospective teachers background knowledge and experiences that will help them to teach hands-on physics effectively. Topics covered include energy and work, fluids and buoyancy, heat, sound, light, electricity and magnetism, and radioactivity. The relationships of these science topics with the corresponding technology and with society are discussed. Prerequisites: Physics 111 or high school physics. Not offered 1994-95.

**221 General Physics.** F, one and one-quarter course, core. This course along with its sequel, 222, is designed for those who do not intend to do further work in physics. Beginning with Newton's mechanics, other topics in the sequence include: waves, heat, electricity and magnetism, light, relativity, and atomic physics. Laboratory. Prerequisites: plane trigonometry and high school algebra. *Mr. S. Steenwyk.*

**222 General Physics.** S, one and one-quarter course, core. A continuation of 221, which is a prerequisite. Laboratory. *Mr. R. Griffioen.*

**223 Physics for the Health Sciences.** F, core. An introduction to those topics in physics which are applicable to a variety of health science fields with special emphasis on understanding various physical aspects of the human body. Topics include basic laboratory techniques and instruments for physical measurements, data analysis, basic mechanics, fluids, heat, electrical circuits, sound, optics, radioactivity and x-rays, a discussion of the nature of physical science, and a Christian approach to science. Laboratory. Prerequisites: high school geometry and algebra. Not open to those who have taken or plan to take 221. *Mr. R. Griffioen.*

**225 Introductory Physics: Electricity, Magnetism, and Waves.** F one and one-quarter course, 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. D. Van Baak.*

**226 Introductory Modern Physics.** S. An introduction to quantum effects and the wave-particle duality of matter and radiation; a study of the structure of atoms, molecules, solids, nuclei, and fundamental particles as described by Schroedinger theory. Einsteinian relativity and statistical mechanics are also introduced. Prerequisites: 225, Mathematics 261. *Mr. D. Van Baak.*

**280 Analog and Digital Electronics.** S. An introduction to electronic circuits and devices and their applications. The following topics are included: A.C. circuit analysis, diode and transistor characteristics, amplifiers, oscillators, operational amplifiers, digital logic gates, flip-flops, counters, and integrated circuits. Laboratory exercises in all of the above topics are performed. Prerequisite: 225. Not offered 1994-95. (Also see Interim 1995 offerings.)

**285 Introduction to Digital Electronics.** F, alternate years. An introduction to digital electronics for students with little or no background in physics or electronics. Topics include: basic circuit elements and laboratory instruments, discrete circuits for digital functions, Boolean algebra for circuit design, logic circuit analysis and design, and integrated circuits. Not intended for students who have taken or plan to take 280, or Engineering 204 and 284. Laboratory. *Mr. D. Van Baak.*

**385 Introduction to Microprocessors.\*** S, alternate years. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems design, interfacing, and peripherals. Laboratory. Prerequisites: 285 or its equivalent and programming experience. *Mr. S. Steenwyk.*

## ADVANCED THEORY COURSES

*All students enrolled in Advanced Theory Courses are expected to attend Physics Department seminars regularly. Prerequisites for all of the 300-level physics courses are Computer Science 141 or its equivalent as well as Mathematics 231 and 261.*

**335 Classical Mechanics.\*** F, alternate years. The motion of particles, of systems of particles, and of rigid bodies is studied by Newtonian and Lagrangian techniques. Topics included are: oscillatory motion, motion in a central force field, motion in non-inertial reference frames, motion of charged particles, and the inertia tensor of rigid bodies. Hamilton's canonical equations are developed and applied to simple systems. Prerequisite: 124 or 126. Not offered 1994-95.

**345 Electromagnetism.\*** F, alternate years. The basic equations of electromagnetism are developed and applied to simple charge and current distributions. Further applications are made to electromagnetic energy and electromagnetic properties of matter. Prerequisite: 225. *Mr. A. Kromminga.*

**346 Electromagnetism.\*** S, alternate years. Maxwell's equations are developed and applied to electromagnetic radiation and physical optics. The relativistic character of electromagnetism is discussed and applied to motion of charged particles and the radiation they emit. Prerequisite: 345. *Mr. A. Kromminga.*

**359 Seminar in Secondary Teaching of Physics.** S. A course in perspectives on, principles of, and practices in the teaching of physics and the other natural sciences at the secondary level. Included are teaching strategies, curriculum studies, readings regarding new developments in science education, and considerations of educational uses of statistics and computers. This course should be taken concurrently with Educ 346, and provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in physics. *Staff.*

**365 Thermodynamics and Statistical Mechanics.\*** S, alternate years. Equations of state, heat capacities, and the laws of ther-

modynamics. The thermodynamic potentials. Application to some simple systems and changes of phase. Kinetic theory. Statistical mechanics with emphasis on the canonical ensemble. Determination of entropy and the thermodynamic potentials with application to crystals and gases. Introduction to quantum statistical mechanics. Prerequisite: 335. Not offered 1994-95.

**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 one or more of the major areas of current research in physics. The course emphasis may be on solid-state, atomic, nuclear, or elementary-particle physics. Prerequisite: 375. Not offered 1994-95.

**390 Independent Study in Physics.** F, I, S, half or full course. Independent readings and research in physics under the supervision of a member of the departmental staff. Prerequisite: permission of the chair. *Staff.*

### LABORATORY COURSES

**181 Basic Electrical Measurements.** F, quarter course. An introduction to basic D.C. electrical measurements including Kirchhoff's Laws, potentiometer circuits, and bridge circuits. Techniques of data handling and analysis and a brief introduction to A.C. circuits are included. *Mr. D. Van Baak.*

**182 Electrical Measurements.** S, quarter course. Applications of D.C. electrical measurements; A.C. circuits, including experiments on frequency response and resonance; and an introduction to digital circuitry. Prerequisites: 181 and Mathematics 161. *Mr. D. Van Baak.*

**186 Introductory Physics Laboratory.** S, quarter course. An introduction to basic D.C. electrical measurements and their use in studying various mechanical systems and

thermodynamic phenomena. Not open to those who have taken 181. Concurrent registration is required in 126 or the permission of the instructor. *Staff.*

**382 and 382 W Modern Physics Laboratory.\*** F and S, quarter course. An introduction to the basic laboratory techniques in atomic, nuclear, and solid-state physics and a study of some of the more important experiments on which modern physical theory is based. This course may be repeated with the permission of the instructor. Prerequisites: 280, Engineering 204 and 284, or a year of college physics and permission of the instructor. *Mr. S. Steenwyk, Mr. D. Van Baak.*

**395-396 Physics Seminar and Research.\*** F, S, half course; I, full course. Experimental or theoretical research on an approved topic and presentation of the result of the research in a departmental seminar. Prerequisites: 382 and the approval of the department. *Mr. J. Van Zytveld.*

### GRADUATE COURSES

**510 Physical Science and Contemporary Society.** This course is designed to show the elementary or middle school teacher how physical science and its resulting technology interact. It does not deal primarily with the concepts and theories of physical science, but will focus on the societal impact of physical science. Topics of major interest include energy sources and energy use, supply and use of other material resources, and the limitations of physical science in solving societal problems. Prerequisite: 111 or its equivalent. Not offered 1994-95.

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

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

**W10 The Life and Times of Albert Einstein.** *A. Kromminga.*

**W50 Laboratory Electronics.** *Mr. D. Van Baak.*

# POLITICAL SCIENCE

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Professors R. De Vries, L. Lugo\*\*, J. Penning, C. Smidt (chair), W. Stevenson,  
C. Strikwerda

The department offers a variety of courses in the areas of American politics, comparative government, international relations, and political theory. Students majoring in political science may follow either the regular major program or a program of concentration in international relations.

To be admitted to a major program in political science a student must have completed one of the core credit courses (151, 201, or 210) with a minimum grade of C (2.0). The regular major program requires American politics (201), international politics (207), one course in comparative government (203, 204, 205, 206, 214, or 303), one course in political theory (305 or 306), plus six additional courses in the department. Only one interim course may be applied to a major.

The political science concentration in international relations requires 201, 207, and 305 or 306; seven additional courses from 203, 204, 205, 206, 214, 303, 308, 309, or one political science elective; plus an approved four-course sequence outside of political science.

A general political science minor requires one course in American politics (201, 202, 209, 212, 310, 312, 315, 317 or 318), one course in comparative and international politics (203, 204, 205, 206, 207, 210, 214, 303, 308, or 309), one course in political theory (151, 305, 306, or 320), and three additional courses, one of which may be an interim course.

A secondary teacher education minor requires 151, 201, 202, and three additional courses approved by the departmental advisor for teacher education, Mr. Robert De Vries. The elementary teacher education minor requires 151, 201, 202, one course in international politics (207, 308, or 309), one course in comparative government (203, 204, 205, 206, 210, 214, or 303), and one additional course in American politics (209, 212, 310, 312, 315, 317, or 318). One interim course may substitute for a course in the last three categories.

Political science majors are encouraged to enroll in internship programs and a variety of off-campus interims in the U.S. and abroad. The department offers a two-course credit Internship in State and Local Government, P.S. 380. Interested students should contact Mr. J. Penning. Students may also enroll for a semester in the American Studies seminar and internship in Washington, D.C., for which they may receive up to two course credits in political science (see Off-Campus Programs). The department also cooperates with the Washington Center for Learning Alternatives. Students interested in Washington programs should contact Mr. C. Smidt.

Although the political science core requirement may be satisfied by 151, 201, or 210, Canadian students are advised to take 210 and prospective elementary teachers either 201 or 210.

**151 Introduction to Politics.** F and S, core. A general survey course which introduces students to basic political concepts and issues, including the nature and task of the state, the ideologies which shape modern

political life, and Christian contributions to political thought and practice. *Staff.*

**201 American Politics.** F and S, core. A study of American national politics. *Empha-*

sis is on the social context, constitutional foundations, processes, and functions of American politics. *Staff*.

**202 American State and Local Politics.** F A study of American politics at the state and local levels. Emphasis is on state policy-making, urban politics, and metropolitics. *Mr. J. Penning*.

**203 West European Politics.** S. A study of the government and politics of Great Britain, France, and Germany. Attention is given to historical development, current political structures, and movements toward economic and political union. *Mr. C. Strikwerda*.

**204 Latin American Politics.** F A study of modern Latin American politics with special emphasis on how different types of political regimes address the challenge of economic development. *Mr. L. Lugo*.

**205 Asian Politics.** S. A study of the political systems and political developments in East and Southeast Asia with particular emphasis on China and Japan. *Mr. C. Strikwerda*.

**206 Russia, the CIS, and Central Europe.** F A study of the development of political systems in the post-communist era with particular emphasis on the prospects of democratic development in the former Soviet Union. *Mr. C. Strikwerda*. Not offered 1994-95.

**207 Introduction to International Politics.** F and S. An analysis of different theoretical approaches to the study of international politics and major problems of the international system, such as nationalism, imperialism, war, nuclear weapons, hunger, and poverty. *Mr. R. De Vries, Mr. L. Lugo*.

**209 Public Administration.\*** S. An introduction to public administration, focusing on organization theory, public management, human resources administration and budgeting. *Mr. J. Penning*.

**210 Canadian Government and Politics.** F A study of the political system of Canada with emphasis on national (federal) government and politics. Examines the origins and development of Canada's political institutions, Canada's constitution, Canadian fed-

eralism, the operation of the parliamentary-cabinet system in Canada, political parties and election, social forces and trends in Canadian politics. *Mr. C. Strikwerda*.

**212 American Public Policy.** An examination of American public policy, focusing on the process of policy-making, methods of evaluating public policy, and the content of American public policy in key areas such as defense, social welfare, criminal justice, and education. *Mr. J. Penning*. Not offered 1994-95.

**214 Central American Politics.** An in-depth analysis of the domestic, regional, and international dimensions of the politics of Central America. The role of the United States and of religious communities will be given special attention. *Mr. L. Lugo*. Not offered 1994-95.

**295 Special topics in Political Science.** *Staff*.

**303 African and Indian Politics.\*** A study of the politics and governments of the African states and India. Emphasis is on the issues and problems of political and economic development. *Mr. R. De Vries*. Not offered 1994-95.

**305 History of Political Thought to the Reformation.\*** F The development of political thought from ancient Greece to the sixteenth century. *Mr. W. Stevenson*.

**306 History of Modern Political Thought.\*** S. Representative political theorists from the sixteenth through the nineteenth century. *Mr. W. Stevenson*.

**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, emerging nations, and the United Nations; the limitations and potential of American foreign policy. *Mr. R. De Vries*.

**309 International Organizations and Law.\*** F An examination of universal and regional international organizations and international law; their function and processes, their limits and possibilities, and their relationship to the international system. Special emphasis is given to the United Nations system. *Mr. R. De Vries*.

310 **Constitutional Law and Judicial Process.** S. A comprehensive study of the role of the courts in the American political system, focusing on the Supreme Court's role in constitutional interpretation. *Mr. W. Stevenson.*

314 **The President and Congress.\*** An analysis of the powers and processes of these two institutions of American government and the changing relationship between them. *Mr. C. Smidt.* Not offered 1994-95.

317 **Parties and Elections.\*** F. An analysis of the nature and importance of political parties and elections to American politics. Topics included are party development, party organization, political campaigns, electoral laws, public opinion, voting behavior, and election reforms. Attention is also given to survey research and the analysis of poll data. In election years, students enrolled in the course are encouraged to participate in the political campaign of the party or candidate of their choice. *Mr. C. Smidt.*

318 **American Politics and Mass Media.\*** A survey of the relationship between American politics and the mass communications media. The course covers the way the federal government through its regulations and its dissemination of information affects the operations of the media, and how the media influence the social and political values of Americans and the functioning of the political system. *Mr. C. Smidt.* Not offered 1994-95.

320 **Twentieth Century Political Thought.** A study of representative political theorists of the twentieth century, their points of emphasis, and their fundamental assumptions regarding politics and political reality. *Mr. W. Stevenson.* Not offered 1994-95.

380 **Internship in State and Local Government.** S, two course units. A field experience involving working for a government agency, an elected government official, or a private interest group in state or local government. Interns work sixteen hours per week under the direction of an agency instructor and attend a weekly seminar conducted by the college instructor. Prerequisites: two political science courses, including 202, or permission of college instructor. Application for internships is made in September of each year. *Mr. J. Penning.*

390 **Independent Study.** F, I, S. Reading or directed projects for majors. Open with the permission of the chair and the instructor under whom the work will be done. *Staff.*

395 **Seminar.\*** *Staff.*

#### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **Urban Politics.** *J. Penning.*

W50 **United Nations Interim in New York.** *R. De Vries.*

W51 **The Global Philosophers.** *L. Lugo.*

## PSYCHOLOGY

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*Professors M. Bolt (chair), J. Brink, W. Joosse, A. Shoemaker, S. Stehouwer,  
R. Terborg, G. Weaver*  
*Associate Professors C. Beversluis, J. Lee*

The department offers a varied set of courses dealing with important facets of individual human functioning. The major and minor programs in psychology are designed to allow students the flexibility to select courses which fit their present interests as well as their future expectations. Students majoring in psychology often enter "people-related" jobs in business, education, and the social services, or pursue graduate study in psychology or associated fields.

Students intending to major in the department must complete 151 with a minimum grade of C (2.0). The nine-course major consists of 151, 250, 306, three 300-level electives, one of which must be chosen from 330 through 334, and three additional courses from the department. Not more than one interim may be included in the

nine-course major nor may 390, or any interim, be counted as a 300-level elective. A student handbook for majors can be obtained from the departmental office.

Students intending to do graduate work in psychology should take 250 by the end of their sophomore year and 308 in the fall of their junior year. They should include 395 in their program of concentration and plan their program with a departmental advisor.

The secondary teacher education minor consists of six courses: 151, 212, 306, 311, one course from 330–334, and one elective. An elementary minor is not available.

The general psychology minor consists of six courses: 151; at least one course from 250, 306, 308, or 330–334; and four approved electives, one of which may be a psychology interim course. The core requirement in psychology is best met by 151. Education 301 satisfies the core requirement only for students in teacher education programs.

**151 Introductory Psychology.** F and S, core. An orientation to many of the central concerns of psychology, this course includes consideration of such issues as perception and consciousness, learning and memory, motivation and emotion, personality development and social interaction, stress and adjustment. Students are 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 factors which influence that behavior. Not open to students who have taken or plan to take 204 or 207. Prerequisite: 151 or Education 301, or permission of the instructor. *Mr. W. Joosse.*

**204 Developmental Psychology: Child.\*** F and S. A basic overview of normal development from birth to adolescence. Organization is chronological (infant, toddler, etc.) and conceptual (cognitive development, social-personality development, etc.). Not open to students who have taken or plan to take 201. Prerequisite: 151 or Education 301, or permission of the instructor. *Staff.*

**207 Developmental Psychology: Adolescent.\*** S. A study of the transitional years of human development from puberty to early adulthood. Emphasis is on developmental

changes and on the tasks which adolescents face in their different roles. Not open to students who have taken or plan to take 201. Prerequisite: 151 or Education 301, or permission of the instructor. *Staff.* Offered in Spring of even-numbered years.

**211 Personality and Adjustment.\*** F and S. A study of theory and research pertinent to personality dynamics and adjustment. Coverage typically includes concepts of mental health, the nature of stress, the self concept, and principles of emotional and interpersonal competence. Special emphasis is given to influential world views, Christian assessments, and personal applications. Prerequisite: 151 or permission of the instructor. *Mr. W. Joosse.* Not offered 1994–95.

**212 Psychopathology.\*** F and S. A study of the wide range of abnormal behaviors. Emphasis is on causes, dynamics, and classification, with some attention to treatment approaches. Prerequisite: 151 or permission of the instructor. *Mr. S. Stehouwer, Mr. G. Weaver.*

**216 Psychology of the Exceptional Child.\*** S. A basic overview of children who differ physically, mentally, or behaviorally from "normal" children. Emphasis on causal factors, characteristics, and diagnosis. Not open to students who have taken or plan to take Special Education 216. Prerequisite: 151 or Education 301, or permission of the instructor. *Staff.* Not offered 1994–95.

**222 The Psychology of Gender.\*** S. This course explores the ways that gender has been studied as a variable in psychological

research and theory. The influence of gender on development, personality, cognition, emotion, and behavior will be examined. Special attention will be given to recent theories of physiological and cultural influences on men's and women's development. Biblical and popular perspectives on gender issues will be examined, and promises and problems in gender relations will also be studied. Prerequisite: 151 or permission of the instructor. *Ms. C. Beversluis.*

**250 Statistics and Research Design.\*** F and S. An introduction to scientific research in psychology including the formulation of hypotheses, the design of experiments, and the analysis and interpretation of data through statistical procedures. Topics covered include measures of central tendency, standard deviation, Z-scores, correlation, regression, hypothesis testing, t-tests, analysis of variance and chi-square. The two-hour lab each week will introduce students to computer analysis of data using SPSS. *Mr. A. Shoemaker.*

**301 Organizational Psychology.\*** F and S. A consideration of psychological concepts and research related to human action in work situations, particularly in organizations. The course includes discussions of the psychological processes of individuals involved in work and management (e.g., perceptual discrimination in varying tasks, strategies in problem solving, motivation for power and achievement, effects of compensation on learning), and the social psychology of the work organization (communication patterns, decision-making processes, performance evaluation, conflict, and stress). The relationship of psychological theory and practice are analyzed through case studies of organizational experiences. Prerequisite: 151 or permission of the instructor. *Mr. J. Lee, Mr. G. Weaver.* In 1994-95 this course is only offered in the spring.

**306 History and Systems of Psychology.\*** F and S. A study of the origins of contemporary psychology within science and within philosophy, and of the development of various systematic approaches to psychology as a separate academic discipline in Europe and the United States. Prerequisites: two courses in psychology or permission of the instructor. *Ms. C. Beversluis.*

**308 Experimental Psychology.\*** F. A continuation of 250 with an emphasis on general research methodology at both the conceptual and applied levels. Consideration is given to topics such as the scientific study of human behavior, the formulation of research problems and hypotheses, research design, statistical inference, decision-making, and the writing of research reports. For majors and others interested in the social, behavioral, and health sciences. Prerequisites: 151 and 250 or permission of the instructor. *Mr. R. Terborg.*

**310 Social Psychology.\*** F and S. A study of how people think about, influence, and relate to one another. Attention is given to such topics as persuasion and attitude change, conformity and obedience, group conflict and decision-making, stereotypes and illusions of social thought, attraction and prejudice, altruism and aggression. Students may not receive credit for this course and Sociology 310. Prerequisite: 151 or permission of the instructor. *Mr. M. Bolt, Mr. J. Brink.*

**311 Theories of Personality.\*** F and S. A study of the enduring human personality characteristics that often distinguish one person from another. Extensive consideration is given to biological, psycho-dynamic, social, cognitive, and trait-descriptive theories of personality structure and functioning. The course also introduces students to a variety of personality scales and inventories designed to identify important individual differences in personality. Prerequisites: 151 and 212, or permission of the instructor. *Mr. J. Brink.*

**312 Principles of Psychological Measurement.\*** F. An introduction to theoretical and practical issues of psychological testing as they relate to assessment, selection, and classification of personnel. Prerequisite: 250 or permission of the instructor. *Mr. A. Shoemaker.* Not offered 1994-95.

**313 Mental Health and the Classroom.\*** S. 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: 212 and 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; enrollment is limited and departmental approval is required prior to registration; 151, 212, and 311. *Staff.*

**322 Perspectives of Psychology.\*** This course explores the relationships of psychology to, or its involvement in such areas as religion, literature, art and culture. When offered the particular topic area will be announced in the class schedule. Offered on an irregular basis. Prerequisite: 151 or permission of instructor. *Staff.*

**323 Psychology and Religion.\*** S This course will examine relationships between psychology and religion. It will include discussions of how several major psychologists have attempted to explain religious faith and practice. The course will examine frameworks that have been proposed for relating Christian beliefs about persons and psychological explanations. Consideration will be given to how these frameworks have influenced recent investigations of areas related to our experiences of Christian faith (e.g. perception, moral development, emotion). Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.* Offered in Spring of even-numbered years.

**330 Psychology of Motivation.\*** S. A thorough discussion of the psychological study of motivation. Recent research findings as well as theory formation in the areas of emotion and motivation are included. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.*

**331 Psychology of Sensation and Perception.\*** S. A detailed examination of the theories and research pertaining to various sensory and perceptual processes in human beings. Methodological, physiological, and pretheoretical issues are addressed. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. A. Shoemaker.* Not offered 1994-95.

**332 Psychology of Learning Processes.\*** S. 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.\*** F An intensive investigation of the physiological bases of behavior. Theories and research concerning the relationship between the nervous system and several aspects of behavior are discussed. Discussion of the mind / brain problem. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Ms. C. Beversluis.*

**334 Cognitive Psychology.\*** F A survey of research and theory in the study of human cognition. The course covers the acquisition, representation, and use of knowledge with emphasis on the processes of memory, language, and decision-making. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. J. Lee.*

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

395 **Research Seminar.**\* S. The preparation, presentation, and discussion of papers based on current psychological literature and upon individual empirical research on selected topics. Prerequisites: 250 and 308. Enrollment is limited and departmental approval is required prior to registration. *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. *Staff.*

511 **Introduction to Guidance and Counseling.** This course provides a survey of theories of emotional disturbance (behavior disorders) and learning disabilities among school-age children adolescents, including

specific examination of psychodynamic, biophysical, systemic, and behavioral models of etiology and treatment. Particular emphasis will be given to identifying methods of treatment in the elementary and secondary schools and the community; these methods will be further examined as cooperating with and complementing the efforts of teachers, parents, and other community professionals. *Staff.*

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

### JANUARY 1995. INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

W10 **Storying Ourselves: A Narrative Perspective on Christians in Psychology.** *J. Lee.*

W11 **Social Psychology in Film.** *M. Bolt.*

W12 **Health Psychology.** *D. De Graaf.*

W50 **Issues in Marriage and Family Life.** *N. Stehouwer, S. Stehouwer.*

W51 **Exploring and Researching Behavior.** *R. Terborg.*

## RELIGION AND THEOLOGY

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*Professors P. Holtrop, J. Primus (chair),\*\* J. Schneider, L. Vos (acting chair for spring semester)*

*Associate Professors A. Griffioen, R. Plantinga, K. Pomykala,\* C. van Houten*

*Assistant Professors D. Harlow, T. Thompson, R. Whitekettle*

The department offers a general major in religion and theology and a teaching major for students in secondary education. In addition, students are encouraged to design group majors, such as Religion and Philosophy, Religion and History, or Religion and Sociology. Three minor concentrations are offered: a group minor in missions; a minor in the Academic Study of Religions for elementary and secondary education students; and a general minor. These programs are described below and will be worked out with a departmental advisor who will help design the program according to the student's specific needs and interests.

The *general major* in religion and theology is not limited to students preparing for the ordained ministry, but designed for students seeking a strong background in biblical and theological studies as preparation for various professions, for graduate education, or for Christian service generally. The general major consists of ten courses, including two core courses and a senior seminar, with emphasis in either biblical studies or systematic/historical studies. At least two courses must be from the advanced level (300-level); an interim course, approved by a departmental advisor, may also be in-

cluded in the required ten courses. Admittance to the major program requires completion of a core course with a minimum grade of C (2.0).

### **General Major**

#### **(Biblical Studies Emphasis)**

- 103 Biblical Literature and Theology (or equivalent)
- 201 Basic Christian Theology (or equivalent)
- Four biblical studies electives
- Three electives from other areas
- 396 Seminar: Religion and Theology

#### **(Systematic/Historical Emphasis)**

- 103 Biblical Literature and Theology (or equivalent)
- 201 Basic Christian Theology (or equivalent)
- Four systematic/historical electives
- Three electives from other areas
- 396 Seminar: Religion and Theology

The *teaching major* is for education students who plan to teach religion in secondary schools (see page 72) and consists of twelve courses, listed below. During student teaching for this program, which is offered in the spring semester, students will also enroll in education 346A and Religion and Theology 359. Since the State of Michigan does not certify students with a major in religion and theology, students who take this teaching major must also complete another major for state certification, although the teaching major in religion and theology does fulfill the state certified academic study of religions minor (see below). Graduates of the teaching major in religion and theology will receive a special certificate from Calvin College as a credential of qualification for secondary religion teaching. Mr. A. Griffioen is the advisor for the teaching major.

### **Teaching Major**

- 103 Biblical Literature and Theology
- 201 Basic Christian Theology
- 250 Introduction to the Study of Religion
- 351 World Religions
- IDIS 234 The Contemporary American Religious Situation
- Four courses from biblical studies and systematic/historical studies (at least one from each area)
- Two courses from Art 231, Classics 231, History 231–233, Philosophy 204, 205, Psychology 323, Sociology 217, Religion and Theology courses in biblical studies and systematic/historical studies, or an approved interim course.
- 359 Seminar: Religion and Education.

*Group majors* in religion and theology, and other fields may be designed according to the guidelines for group majors (see page 62). For example, a student wishing to present a group major in Religion and Philosophy could take 4-6 courses in religion and theology and 4-6 courses in philosophy, and two courses from a third discipline. Group majors must be carefully planned and must be approved by both major department chairs and the registrar.

The *group minor* in missions is for students interested in missions and other cross-cultural ministries and consists of six courses, listed below. Ms. C. van Houten is the advisor for the group minor in missions.

#### **Group Minor in Missions**

251 Christianity and the World's Religions

252 Introduction to Missions

Sociology 253 Intercultural Communication

Three courses chosen (in consultation with an advisor) from the following: Religion 351, Geography 210, Sociology 217, Economics 337, IDIS 201, area study courses (History 203–208, 233–236, 360, Spanish 310), multicultural lecturer courses, an appropriate interim course, and other courses approved by the advisor as part of an introduction to holistic missions.

The *teaching minor* leading to State of Michigan certification in the academic study of religions is for students in elementary and secondary education; it consists of six courses, listed below. Ordinarily, Religion 250 should be the first course taken in the teaching minor program. Student teaching is offered only in the spring semester. The advisor for the teaching minor is Mr. A. Griffioen.

#### **Teaching Minor (State certification in the Academic Study of Religions)**

250 Introduction to the Study of Religion

351 World Religions

IDIS 234 The Contemporary American Religious Situation

Two courses chosen (in consultation with the program advisor) from the following: Art 231, Classics 231, History 231–233, Philosophy 204, 205, Psychology 323, Religion and Theology courses in biblical studies and systematic/historical studies, and Sociology 217, or approved interim courses.

359 Seminar: Religion and Education (for secondary education students) Elementary education students take a third course from those listed above and Education 309.

The *general minor* in religion and theology is for students who seek to develop a biblical and theological perspective for work in other disciplines and for Christian service generally. This minor consists of six courses: one core course and five others, one of which must be from the advanced level (300-level). An appropriate interim course may be included with the approval of the advisor.

#### **General Minor**

One core course in Religion and Theology.

Five other courses from any area of Religion and Theology

Regarding *core requirements*, one of the two basic core courses in religion and theology must be taken from the biblical studies area; the other from systematic/historical studies. These requirements are normally met by taking 103 and 201. They may also be fulfilled, however, by taking one of the 200-level courses in biblical studies, and any one of the systematic/historical offerings or 251. Any department course except interims may be chosen by students electing a third core course in religion and theology. Interdisciplinary 234 will also satisfy as a third core course in religion and theology. Interdisciplinary W10 (CPOL) *cannot* be used to fulfill the two basic religion and theology core requirements.

## BASIC CORE COURSES

103 **Biblical Literature and Theology.** F and S, core. A study of the unfolding of the history of redemption as set forth within the historical framework of the Old Testament, Intertestament, and New Testament eras. Biblical books are analyzed, varying modes of literary expression are examined, and the major themes of Scripture are explicated. Open only to first-year and sophomore students. *Staff.*

201 **Basic Christian Theology.** F and S, core. An introduction to the methods and concepts of systematic theology, to the range of historic Christian and Reformed doctrines (such as God, creation, redemption, Spirit and church, and last things), and to present-day challenges in creative Reformed thought. Not open to first-year students. *Staff.*

## INTERMEDIATE AND ADVANCED BIBLICAL STUDIES COURSES

*These courses are typically offered on an every other year basis.*

211 **Pentateuch.** F, core. A study of the first five books of the Bible. This course examines the accounts of creation, fall, Israel's ancestors, exodus, and giving of the Law using literary and historical analysis. Comparative literature from the Ancient Near East will be used to shed light on biblical passages. Theological issues explored include the character of God, what it means to be a human, our covenantal relationship with God, the nature of the world, and the presence of God in historical events. Not open to first-year students. *Ms. C. van Houten.*

212 **Old Testament Historical Books.** core. A study of Joshua-2 Kings, 1-2 Chronicles, and Ezra-Nehemiah in terms of their literary features, historical settings, and theological themes. Particular attention will be devoted to the prophetic character of these works that provide a theological interpretation of Israel's history. Not open to first-year students. Not offered 1994-95.

213 **The Psalms and Wisdom Books.** S, core. A study of the books of Psalms, Proverbs, Job, and Ecclesiastes. The three focuses of the course will be: how to read poetry, the different categories of the Psalms and their

interpretation, and the role of wisdom books in the Bible. Not open to first-year students. *Mr. R. Whitekettle.*

214 **Prophets.** 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 first-year students. Not offered 1994-95.

221 **Synoptic Gospels and Acts.** core. A study of Matthew, Mark, and Luke-Acts that concentrates on the relationships, similarities, and differences in form and message among these three works. Not open to first-year students. Not offered 1994-95.

222 **Johannine Literature.** F, core. A study of the Fourth Gospel and 1-3 John with a view to considering matters of introduction, interpretation, and theology. Not open to first-year students. *Mr. D. Harlow.*

223 **Paul's Letters.** core. A study of the letters of Paul in terms of their theological and ethical themes with an emphasis on how these themes are expressed in the context of Paul's ministry to various early Christian communities. Not open to first-year students. Not offered 1994-95.

224 **Revelation and General Letters.** S, core. A study of the Revelation of John and the general letters, including Hebrews, James, 1 & 2 Peter, and Jude, in terms of their literary features, historical setting, theological emphases, and present relevance. Not open to first-year students. *Mr. L. Vos.*

307 **Interpreting the Bible.\*** F A study of the methods and principles of biblical interpretation. Various exegetical and hermeneutical approaches will be examined and evaluated in terms of their usefulness for understanding the meaning and message of the scriptures. Prerequisite: a biblical core course. *Mr. L. Vos.*

309 **Biblical Theology.\*** S. A course in constructive biblical theology, focussing on central themes, the problem of the unity and diversity of scripture, the "center" of biblical revelation, and proper methodology. Issues are considered in the context of historic and recent attempts to construct a bib-

lical theology. Prerequisite: a biblical core course. *Ms. C. van Houten.*

**311 History and Archaeology of Ancient Israel.\*** F A study of the history of ancient Israel from the patriarchs through Alexander the Great in the context of recent research on this topic. This course will consider the sources for reconstructing the history of Israel, including the Old Testament, Ancient Near Eastern literary remains, and archaeological evidence, as well as appropriate methods for interpreting these sources. Prerequisite: a biblical core course. *Mr. R. Whitekettle.*

**313 Current Issues in Old Testament Studies.** An examination of a selected topic at the forefront of contemporary Old Testament studies. Prerequisite: a biblical core course. Not offered 1994-95.

**321 The Intertestamental Period.\*** A study of the history, literature, and theological developments of Judaism from the return from exile through the time of Christ, as a background for understanding the New Testament. Literature studied will include the Apocrypha and Dead Sea Scrolls. Prerequisite: a biblical core course. Not offered 1994-95.

**323 The Quest of the Historical Jesus.\*** This course studies and evaluates modern attempts to reconstruct the life and teachings of Jesus of Nazareth. The history of the quest will be traced from its beginnings in the late 18th century to the present-day "Jesus Seminar." Particular attention will be devoted to the question of the relationship between the historical Jesus and the presentation of Jesus in the Gospels. Prerequisite: a biblical core course. Not offered 1994-95.

**INTERMEDIATE AND ADVANCED  
SYSTEMATIC/HISTORICAL STUDIES  
COURSES.** *These courses are typically  
offered on an every other year basis.*

**230 The Doctrine of Revelation.** S, core. This course is designed to help students to explore reformed concepts of revelation in contemporary cultural context. Traditional models of general and special revelation, and models of biblical inspiration and authority will be explored and developed in the context of modern and post-modern concerns in philosophy, science, and non-Chris-

tian religions. Not open to first-year students. *Mr. J. Schneider.*

**231 The Doctrine of God.** F, core. This course is designed to enable students to examine Christian and Reformed concepts of God in considerable depth, and in the contexts of modern academic discussion and debate. Topics include: the attributes of God in current discussion and debate; the God of good, power, and evil; the idea of the God who is three-in-one. Not open to first-year students. *Mr. J. Schneider.*

**232 The Doctrine of Creation.** S, core. This course investigates the Christian teaching about the creation of the world. Such themes as the following will be considered: the interpretation of Genesis 1 and 2, creation out of nothing, creation and evolution, the goodness of creation and the problem of evil, the image of God, the cultural mandate and the idea of stewardship, and the eclipse of creation in modern thought. Not open to first-year students. *Mr. T. Thompson.*

**233 The Doctrine of Christ and Reconciliation.** core. The main goals of this course are to provide students with opportunity to examine and reflect upon historic and Reformed doctrines of the person and works of Christ in the contexts of contemporary analytic thought and current biblical theology. Topics will include: Christ as God and man in current discussion; New Testament Christology and the current debates; Reformed Christology in the making. Not open to first-year students. Not offered 1994-95.

**234 The Doctrine of the Holy Spirit and Church.** F, core. A study of the biblical teachings, confessional formulations, theological reflections, and experiential impact of the person and work of the Holy Spirit in the life of believing communities, as well as the attributes and ministries of the Church universal. Not open to first-year students. *Mr. A. Griffioen.*

**235 Eschatology.** core. A study of Christian teachings concerning the end times and last things—their biblical basis, historical formulations, and contemporary relevance. Topics covered include the return of Christ, the final judgment, the resurrection of the body, and eternal life. Millennialist and dispensationalist issues are also critically

analyzed both historically and theologically. Not open to first-year students. Not offered 1994-95.

241 **General Church History.** F, core. A survey of the history of the Christian church from its beginning to the present time, noting deviations from apostolic faith and practice, the interplay with the political, the great church councils, the crises that emerge, divisions and reunions, and the confluence of forces that determine the complexion of the Christian church today. Not open to first-year students. *Mr. J. Primus.*

242 **American Religious History.\*** core. A consideration of the religious history of America from the immigration period to the present. Attention is paid to the European background, the early church beginnings in their diversity, the colonial era, the westward movement, current ecumenism, and the major social and political developments and 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 first-year students. Not offered 1994-95.

301 **Christianity and Culture.** F and S, core. An historically-oriented study of the Reformed Christian tradition in the Western world—its origin and development, its basic concepts and life-perspectives, its cultural impact and contemporary relevance. Not open to first-year students. *Mr. P. Holtrop, Mr. J. Primus.*

332 **Basic Christian Ethics.\*** S, core. A biblical-theological study of moral issues, both personal and social, considering relevant ethical principles and practices as they developed in the Judeo-Christian tradition. Not open to first-year students. *Mr. P. Holtrop.*

341 **Early and Medieval Theology.\*** core. A study of the main themes in western Christian theology from the post-apostolic period to the dawn of the Protestant Reformation. This course considers the early articulations of faith in the Apostolic Fathers, through the Trinitarian and Christological controversies, to Augustine as a pivotal figure, then continues with a study of medieval theology as represented by such figures as Anselm, Aquinas, Ockham, and Hus. The focus

throughout this course is on similar and contrasting views on such matters as faith and atonement, Scripture and tradition, church and sacraments, and the papacy and society. Selected writings from major theologians will be studied. Not open to first-year students. Not offered 1994-95.

343 **Reformation Theology.\*** F, core. A study of Christian doctrine as formulated in the Protestant Reformation and refined and elaborated by later Reformed theologians. Comparisons are drawn between the Reformed system and those of other branches of Christendom. Calvin's *Institutes of the Christian Religion* serves as a basic text. Not open to first-year students. *Mr. P. Holtrop.*

345 **Modern Theology.** core. A study of Christian theology from the eighteenth to twentieth century. This course considers how the Enlightenment affected Protestant theology, as reflected in the new interaction of theology, philosophy, and science, and studies major modern theologians in light of this background. Selected writings from major figures of the period, such as Schleiermacher, Barth, Bultmann, and Tillich, will be studied. Not open to first-year students. Not offered 1994-95.

## WORLD RELIGIONS AND MISSIONS

250 **Introduction to the Study of Religion.** F A thematic introduction to the phenomenon of religion in comparative perspective. Issues examined include the dichotomy between the sacred and the profane, the nature of religious experience and its various expressions in life, the significance of myth and ritual, and differing analyses of human existence. Attention is also given to questions about the origin, nature, and function of religion in human life and society, and to issues pertaining to the study of religion in the humanities and social sciences. *Mr. R. Plantinga.*

251 **Christianity and the World's Religions.** core. An examination of the relationship of Christianity to the religions of the world. An attempt is made to understand the phenomenon of religion from a theological perspective by investigating how various biblical and Christian writers have viewed Christianity's place in the religious history of the world.

Special emphasis is placed on twentieth century attempts to confront the reality of religious pluralism. Not open to first-year students. Not offered 1994-95.

**252 Introduction to Missions.** A general introduction to Christian missions in biblical and historical perspective. This course surveys the biblical and theological foundations for missions, and the church's interpretation and implementation of the task of spreading the gospel. The methods, challenges, successes, and failures of Christian missionary activity will be considered. Students will be involved in a local mission organization and use this practical experience as an additional basis for reflection. Not offered 1994-95.

**351 World Religions.** S. An historical investigation of the nature of religion and its study by examining the chief theories and practices of some of the world's major non-Christian religions, including Hinduism, Buddhism, Confucianism, Taoism, and Islam. Emphasis is placed on each tradition's analysis of the basic human problem and the solution that it offers to the problem. Some attention is also paid to new, emergent religious movements and their relationship to older established traditions. Not open to first-year students. *Mr. R. Plantinga.*

**352 Judaism.** S. A study of the major developments in Jewish life, thought, and practice beginning with the period of Ezra and extending to the contemporary period. Subjects studied will include rabbinic Judaism and its literature - the Mishnah and the Talmuds, medieval Jewish philosophy and mysticism, emancipation, Zionism, the Holocaust, and North American Judaism. The question of Jewish-Christian dialogue will also be considered. Not open to first-year students. *Mr. K. Pomykala.*

**355 New Religious Movements.** F A study of the emergence of selected new religious movements in the Western world. Included in this study will be an investigation of the nature of the modern context and the place of religion in it, the relationship of new movements to established religious traditions, the role of charismatic leaders, and the strategies new movements employ in order to survive and grow. Some consideration is

also given to the phenomenon of conversion, as well as to the responses to new religious movements made by various bodies in both the private and public sectors of contemporary society. Not open to first-year students. *Mr. R. Plantinga.*

## SEMINARS

**359 Seminar: Religion and Education.** S. A course for seniors in the teaching major and the academic study of religions minor. It includes practical and bibliography work and concludes with a major research paper. *Mr. A. Griffioen.*

**396 Seminar: Religion and Theology.** S. An advanced seminar for senior majors in Religion and Theology and other qualified students. This course considers significant theological issues and requires a major research paper. Prerequisite: three electives in Religion and Theology *and* for non-majors permission of the instructor. *Mr. K. Pomykala.*

## GRADUATE COURSES

**510 Theological and Philosophical Hermeneutics.** This course is an intensive study of the theory and methods of biblical interpretation developed in the context of modern theology and philosophy. Questions about language and events, experience and significance, and authority and community comprise the core of this course. *Staff.*

**580 Perspectives, Programs, and Practices in Bible and Religion Curriculum.** A study of various approaches in the schools to curriculum and teaching in biblical studies, church history, Reformed thought, and world religions. Consideration is given to the way fundamental differences of perspective on biblical Christianity influence the selection and use of curriculum designs, materials, and teaching techniques. Course content is adapted to the various grade levels of particular interest to enrollees. *Staff.*

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

## JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

**W10 Israel: The Land of the Bible.** Ms. C. *van Houten.*

W11 *Anti-Semitism and the Holocaust.* Mr. K. Pomykala.

W12 *The Kingdom of God in America.* Mr. A. Griffioen.

W13 *The Story of the Bible.* Mr. L. Vos.

W13 *From Calvin to Calvinism.* Mr. P. Holtrop.

## SOCIOLOGY AND SOCIAL WORK

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*Professors G. De Blaey, P. De Jong (director of social work), H. Holstege, R. Rice, W. Smit, D. Wilson (chair)*

*Assistant Professor C. Kreykes Brandsen (social work practicum coordinator), P. Szto.*

*Associate Professors M. Loyd-Paige, M. Zwaanstra*

*Adjunct Professor D. Guthrie*

The department offers courses in sociology, criminal justice, social work, and anthropology. Sociology is the study of the principles of group relationships, social institutions, and the influence of the group on the individual. Criminal justice is the study of the nature and treatment of crime in society and the interrelationship among criminal law, social order, and social justice. Social work is the study of the theory and practice principles necessary to prepare one for generalist professional social work practice. Anthropology is the study of the cultural values of peoples around the world and how these values become expressed in specific behavioral patterns. Programs in the department may lead to a departmental major in sociology, a minor in sociology, a group major in criminal justice, a major in social work leading to a Bachelor of Social Work (B.S.W.) degree, and a minor in social work.

The major concentration in sociology consists of 151, 318, 320, and six additional sociology courses. A sociology minor consists of 151 and five approved electives. One approved interim course may be included in the major or minor program. Students who spend a semester at the Chicago Metropolitan Center may apply some of that work to a departmental major or minor. For admission to the major program, a student must complete 151 with a minimum grade of C (2.0).

The thirteen course group major in criminal justice provides the theory, context, and practice needed to qualify graduates to make informed decisions in the areas of crime prevention, correction, and control. Nine courses must be taken in the Department of Sociology: 211, 212, 250 or 306, 317, 319, 320, and an approved interim and two course units from either 380 or Political Science 380. The remaining courses provide a context for a broad range of criminal justice concerns. Two courses must be selected from either Political Science or Psychology; and two courses must be chosen from the Contextual disciplines. Specific requirements in these areas are as follows: For those who opt for Political Science: 212 and one additional course from 201, 202, 209, 210, 310; for those who opt for Psychology: 212 and one additional course from 211, 301, 310, 311. The contextual requirement is fulfilled by taking an ethics course (either Philosophy 205 or Religion 332) and one of the following: Philosophy 202, 207, or History 356. A fuller description of the criminal justice program requirements is found on page 95-96.

The major in social work leading to a B.S.W. degree consists of twelve course units: Social Work 240, 250, 320, 350, 360, 370, 371, 372, 373, and 3 units of 380. These courses prepare one for entry level social work positions involving generalist practice with individuals, families, groups, organizations and communities. Students who wish to earn the B.S.W. degree normally apply for admission to the B.S.W. program by February 15 of their sophomore year. A fuller description of the B.S.W. program requirements is given both on pages 87-88 of this catalog and in the *Social Work Student Handbook* which can be obtained at the departmental office (College Center 210).

The minor in social work consists of six courses: either Psychology 151 or Sociology 151; Social Work 240, 350, 360; and any two additional courses from Social Work 250, 370, and Sociology 212, 253, 304, 306, 308, 309, 314, 316, 317, and 319.

The core requirement in sociology may be met by 151 or 217. Sociology 217 and 311 may be a part of the teaching minor in the academic study of religions.

### SOCIOLOGY COURSES

**151 Sociological Principles and Perspective.** F and S, core. A general introduction to sociology as a body of knowledge dealing with group relationships as these affect both the individual and society. An attempt is made to show how a sociological perspective offers a rational interpretation of issues current in our society. *Staff.*

**211 Criminology and Delinquency.** S. An examination of the nature, extent, and causes of crime and delinquency. Historical and current theories of the causes of crime and delinquency will be examined in terms of their ability to assist in understanding different types of crime as a prerequisite to prevention, treatment, and control. *Staff.*

**212 The Criminal Justice System.** F A survey and analysis of law enforcement, the courts, and corrections with special attention given to the ethical, legal, and social issues that must be confronted when these components of the traditional criminal justice system are expected to bring about social justice to offenders, victims, and society generally. Goals of public safety, crime deterrence, offender rehabilitation, victim restoration, and moral accountability are assessed. *Staff.*

**217 Social Anthropology.** F and S, core. A study of the historical trends in anthropology that have led to its present day perspective. The concepts of functionalism and cultural relativism are examined and evaluated.

The course surveys various cultural patterns around the world. *Mr. D. Wilson.*

**250 Diversity and Inequality in North American Society.** F and S. An analysis of the social structure of diversity and the social processes of inequality in contemporary North American society. The major objectives of the course are to study the interrelationships of gender, race, and class and to develop an understanding of current social conditions through inclusive analysis of gender, race-ethnic, and class relations. Emphasis is placed on patterns and consequences of discrimination and oppression. *Ms. M. Loyd-Paige.*

**253 Intercultural Communication.** F and S. An examination of the anthropological principles relating to cross-cultural communication. This examination requires an extensive comparison of the components of cultural systems and the nature of cultural dynamics. The areas of application include government, business, peace corps, development, and mission work, with special emphasis on the last two. Special topics include developing an appropriate attitude regarding indigenous cultures and the management of culture shock. *Mr. D. Wilson.*

**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.**\* S. An analysis of deviant behavior: its causes, manifestations, prevention, and programs of control. Special attention is given to the role of social norms in generating as well as controlling deviance. Emphasis is put on ways in which social structures generate and label deviance. Implications are drawn for various institutions, particularly the school and the church. *Ms. M. Loyd-Paige.*

308 **Demography and World Population Problems.**\* F. This introduction to demographic analysis of society includes a consideration of the major demographic theories of population growth and how these contribute to an understanding of population explosion; a review of how the socio-cultural dimension of human society affects major sources of population growth (fertility, mortality, migration, and how variations in these reciprocally affect society); and an analysis of the causes and consequences of population size, distribution, and composition for human society. *Mr. R. Rice.*

309 **Sociology of Education.**\* S. 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 1994-95.

310 **Social Psychology.**\* F. Human behavior as a consequence of psychological makeup and socio-cultural environment. Attention is given to social interaction as it occurs in small group settings. Attention is also given to theoretical frameworks emphasizing self-concept and role playing. Students may not receive credit for this course and Psychology 310. *Mr. G. De Blaeys.*

314 **Contemporary Social Problems.**\* S. The course will begin with a theoretical examination of social problems generally. Various contemporary social problems will be discussed with one selected for major emphasis. *Staff.*

315 **Sociology of Sport.**\* S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving special attention are youth sports, interscho-

lastic 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.*

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.*

317 **Crime and Community.** S. An intensive study of both the negative and positive influences that the dominant structures, norms, and values of the community have, and can have, on crime and delinquency. Both overt and covert ties between the dominant structures, norms, and values of the community (as resident in basic institutions, treatment and control agencies, the media, and public opinion) and the nature of crime and delinquency will be examined. Negative influences will be considered by focusing on such topics as victimization, evasive norms, vigilantism, and apathy. The challenge to influence crime positively through individual and community action will be considered by discussing such topics as volunteerism and community based alternatives to traditional treatment and control programs. Prerequisite: Soc. 212. *Staff.*

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.*

319 **Special Problems in Criminal Justice.** Concerted attention will be paid to a major criminal justice related issue or problem, focusing particularly on those for which a Reformed Christian sociological perspective is most strategic. Confronting the drug problem, and White Collar Crime are illustrations. *TBA staff.*

320 **Social Research.**\* F and S. An assessment of the nature of the research process as applied to the study of theoretical problems in social science. Students are guided in designing and conducting a research project, involving definition of the problem, consideration of appropriate methods, and the collection and analysis of data. Prerequisite: 151. *Mr. W. Smit.*

380 **Internship in Criminal Justice.** F and S. Senior Criminal Justice students are placed each semester in a Juvenile or Criminal Justice Agency; law enforcement, the courts, or corrections. An on-site supervisor monitors and directs the student's day-to-day development in knowledge, skill, and personal growth. These experiences are complemented by regularly scheduled seminars conducted by the college instructor. At the conclusion of the student's field experience, a formal written evaluation is required of the student's field supervisor. Evaluation guidelines, complete with suggested format, touch on each of four general criminal justice related areas of assessment: 1) expansion of criminal justice knowledge base, 2) acquisition and sharpening of skills in relating to criminal justice issues, 3) development of and ability to apply one's moral values, and 4) development of (pre)professional orientation and attitudes. This field-based assessment is complemented by a capstone paper the student must submit to the seminar instructor, testing his/her ability to bridge the theory-practice "gap." Prerequisite: Senior status and completion of internship application. *Staff.*

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

395 **Seminar.**

### **SOCIAL WORK COURSES**

240 **Introduction to Social Work and Social Welfare.** F and S. An introduction to the profession of social work and the field of social welfare. Attention is given to the development of social welfare as a social institution, including the development of philosophies, values, and attitudes which influence the theory, policy, and practice of social work. Practice settings, professional roles, and value and ethical issues are also

considered to increase awareness of the profession and aid students in considering social work as a career. *Mr. P. Szto.*

250 **Diversity and Inequality in North American Society.** See Sociology 250 for description.

320 **Social Research.** See Sociology 320 for description. Prerequisites: Sociology 151 and Social Work 240.

350 **Human Behavior and the Social Environment.** F A study of the person in her / his environment using a systems-based ecological model of human behavior. Knowledge about persons as biological, psychological, social, cultural, and spiritual creatures is integrated as the "person" is followed through the life cycle. Theoretical frameworks from prerequisite courses are integrated to enable students to assess micro and macro influences on human behavior. Prerequisites: Biology core, English 100, Social Science core, Social Work 240, 250. *Ms. C. Kreykes Brandsen.*

360 **Social Welfare Policy Analysis.** F and S. A value-critical analysis and evaluation of social welfare policies and programs as responses to defined social problems in their historical, political, and economic contexts. Students will examine the role of the direct provider of social services as a policy practitioner. Prerequisites: History core, Social Science core, Social Work 240. *Mr. P. Szto.*

370 **The Helping Interview.** F and S. A course to teach students the basic skills necessary to conduct a helping interview. Students participate in videotaped role plays. The course also contains contextual material about ethical issues, a Christian view of relationship and interviewing, and interviewing people from different backgrounds. Prerequisite: 240, 350 (or concurrent enrollment). *Mr. P. De Jong.*

371 **Generalist Practice With Individuals and Families.** F A study of generalist social work practice within a "human behavior and social environment" and problem solving context. This course focuses on case management skills, interventions, and issues with individuals and families. Special attention is given to working with clients from different backgrounds. Prerequisites: 320, 350, 360 and 370. *Mr. P. De Jong.*

**372 Generalist Practice With Groups.** S. A study of generalist social work practice with groups with an emphasis on how the social work profession utilizes groups to accomplish individual, family, group, organizational, and community goals. Prerequisite: 371. Ms. C. Kreykes Brandsen.

**373 Generalist Practice with Organizations and Communities.** S. A study of generalist social work practice skills, interventions, and issues with organizations and communities. Prerequisite: 371 (or concurrent enrollment). Ms. M. Zwaanstra.

**380 Social Work Practicum.** F, I and S. Students are placed in a community agency (minimum of 400 hours) under the supervision of a professional social worker. Students will engage in several social work roles and activities to continue to develop generalist practice skills and knowledge of the profession. A weekly on-campus seminar is also required. Prerequisites: previous or concurrent enrollment in 371 (Fall) and 372 (Spring), admission to the B.S.W. program,

and satisfactory completion of the practicum admission process. Ms. C. Kreykes Brandsen, Mr. P. Szto, Ms. M. Zwaanstra, Staff.

### GRADUATE COURSES

**501 School in Community.** Summer. A study of the reciprocal relationship between the school and the community. Particular attention is paid to the interrelationship between the school and religious, familial, political, and economic institutions. Mr. G. De Blaey.

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

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

**W10 Life in Africa.** R. Rice.

**W11 The Planned Family.** W. Smit.

**W50 The Deinstitutionalization of the Mentally Ill: Community Support and Hope for Some and Homelessness and Despair for Others.** H. Holstege.

## SPANISH

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*Professors S. Clevenger, E. Greenway, J. Lamse (acting chair), E. Miller*  
*Assistant Professor C. Johnson*  
*Instructors J. Evans, C. McGrath*

Programs for students wishing to major in Spanish are worked out individually by the faculty advisor. To be eligible a student must have completed at least two courses with a minimum average of C (2.0) and must have completed 101-102, 121-122, or the equivalent.

The typical major requires ten courses beyond 102 or 122; may include 123 or 201 and 202; and must include 301, 302, at least two survey courses, and two 300-advanced literature courses. Six-course minors are also possible and must include 301, 302, two literary survey courses, and two approved electives. The advisor for these programs is Ms. Sandra Clevenger.

The Spanish secondary teacher education major requires nine college-level courses including 301, 302, and 304 and two survey courses. The minor requires 301, 302 and two survey courses. The advisor for these programs is Ms. Edna Greenway. The Spanish component of the three-minor elementary education program requires 301, 302, 304, and 310 and two other courses. The advisor for the three-minor elementary education program and the bilingual education program is Ms. Edna Greenway.

Students in teacher education, secondary majors and minors, the three- minor elementary and bilingual education programs must pass a Spanish proficiency examination prior to the teaching internship. The examination is offered twice each school year, during October and March; further information is available from the Spanish Department. Directed teaching in secondary Spanish is available only in the Spring semester. Prior to the teaching internship, students must have the approval of the department. Criteria for approval are found in the *Teacher Education Program Guidebook*, available in the Education Department.

During the spring semester Calvin offers a full-time language program in Spain by which students can complete 101, 102, 201, and 202, satisfying the foreign language requirement for a bachelor's degree. An advanced program for Spanish majors and minors is also available in Spain. However, all students whose major program is Spanish (including those with group majors of which Spanish is a part) must take their last Spanish course on campus. The advisor for these programs is Ms. Sandra Clevenger.

Students who successfully complete the Latin American Studies Program, (LASP), receive a one-course LASP credit which may be applied to the Spanish major and minor programs. They may also earn one additional credit for a university literature course, pending department approval. Students planning to go on the LASP normally do not take Spanish 302 at Calvin.

The fine arts core may be met by any 300-level literature courses.

## LANGUAGE

Students in Calvin's Semester in Spain program, which is taught during the second semester of each year in Denia, Spain, receive credit for 101, 102, 201, and 202.

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

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

121-122-123. **Introductory and Intermediate Spanish.** F, I, S. A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school Spanish but who, on the basis of a placement test, are not prepared for 201. *Staff.*

201 **Intermediate Spanish.** F Review of essential grammatical structures and further training in spoken and written Spanish. Readings from significant Spanish authors. Prerequisites: 101 and 102 or other equivalents. *Staff.*

202 **Intermediate Spanish.** F and S. Continuation of 201. *Staff.*

301 **Advanced Grammar and Composition.** F and S. An intensive review of crucial aspects of Spanish grammar, emphasizing the language used in everyday communication by educated persons. The goal of the class is to develop skill in written communication. Progress in the grammar review will be reinforced by a series of guided compositions. At the end of the course the student will be examined in aspects of the grammar and mastery of writing techniques, and will complete a final writing project involving research. *Staff.*

302 **Advanced Grammar and Conversation.\*** F and S. A course for the student who wishes to improve his facility in the language, who is preparing for graduate study, or who expects to teach Spanish. The course includes the study of conversation, grammar, vocabulary, and idioms to develop competence in speaking idiomatic Spanish. The emphasis is on improved pronunciation and fluency through conversation, debates, and oral presentations. Prerequisite: 202 or its equivalent. *Staff.*

304 **Spanish-English Linguistics.** F (Formerly 360) An examination of the differences between English and Spanish, particu-

larly those involving sound, spelling, structure, and vocabulary, in order to improve the students' communication skills and to understand the errors made by those learning a second language. Testing and assessment of language skill is discussed. The course is planned primarily for those interested in bilingual education, but it is useful for others in foreign language. Conducted in Spanish. To be taken after or concurrently with 301. *Ms. M. Bierling.*

### LITERATURE

330 **Survey of Literature of Spain I.** The major writers and movements in Spanish literature from the Middle Ages through the Golden Age within their cultural-historical context. Conducted in Spanish. To be taken after or concurrently with 301. *Mr. E. Miller.*

331 **Survey of Literature of Spain II.** The major writers and movements in Spanish literature from the Golden Age to the present within their cultural-historical context. Conducted in Spanish. To be taken after or concurrently with 301. *Mr. E. Miller.*

332 **Survey of the Literature of Latin America I.** F The major writers and movements in Latin American literature from the Colonial Period through Modernism within their cultural-historical context. Conducted in Spanish. To be taken after or concurrently with 301. *Mr. C. McGrath.*

333 **Survey of the Literature of Latin America II.** S. The major writers and movements in Latin American literature from Modernism to the present within their cultural-historical context. Conducted in Spanish. To be taken after or concurrently with 301. *Mr. C. McGrath.*

351 **Spanish Literature from the Middle Ages through the Renaissance.** S. This course focuses on the development of Spanish literature from its inception through the Renaissance. Masterpieces in the following genres are analyzed: epic and lyric poetry; eclogues and pre-Golden Age drama; and the sentimental, the pastoral, and the picaresque novel. Oral presentations and/or research papers are required. Prerequisite: 330 or 331. *Ms. S. Clevenger.*

352 **Spanish Literature of the Golden Age.** S. This course focuses on the literature of

the sixteenth and seventeenth centuries. Masterpieces in the following genres are analyzed: Renaissance and Baroque poetry; drama of the Lope and Calderón cycles; the origins of the modern Spanish novel, and the literature of the Counter-Reformation. Oral presentations, and/or research papers are required. Prerequisite: 330 or 331. *Mr. C. Johnson.*

353 **Spanish Literature from the Eighteenth Century to the Present.** S. This course focuses on the Spanish literature of the eighteenth century to the present. Masterpieces in the following genres are analyzed: Neoclassic drama, romantic drama and poetry, essays and poetry of the Generation of '98, twentieth century poetry, drama and novel. Oral presentations, and/or research papers are required. Prerequisite: 330 or 331. *Ms. S. Clevenger.*

356 **Foreign Language Education in the Elementary School.** Theory and practice of foreign language teaching in the elementary school. Study of language skill development, second language acquisition, methodologies, curriculum and programs. Required for K-12 foreign language endorsement. To be taken prior to Educ 346 (Directed Teaching) and Spanish 359 (Seminar in Secondary Teaching). Strongly recommended as an elective for elementary foreign language teachers. *Ms. E. Greenway.*

359 **Seminar in Principles and Practices in Secondary Spanish Teaching.** S. A course in perspectives on, principles of, and practices in the teaching of Spanish on the secondary level. This course should be taken concurrently with Education 349: Directed Teaching. Before taking this course, students must pass the Spanish Department language exam and complete Education 301 and 303. *Staff.*

361 **Latin American Literature from the Colonial Period through Romanticism.** F This course focuses on the literature of Latin America from the Colonial Period through Romanticism. Masterpieces in the following genres are analyzed: Colonial chronicles; epic poetry; Baroque poetry; picaresque novel; tradiciones; Neoclassic poetry; romantic novel, essay, and poetry. Oral presentations and/or research papers are required.

Prerequisite: 332 or 333. *Mr. C. Johnson.*

**362 Latin American Literature from Pre-Modernism to 1945.** F This course focuses on the literature of Latin America from Pre-Modernism to 1945. Masterpieces in the following genres are analyzed: Pre-Modernist poetry, short story, and essay; Modernist poetry, short story and essay; poetry and short story of the *Vanguardia*. Oral presentations and/or research papers are required. Prerequisite: 332 or 333. *Mr. C. Johnson.*

**363 Contemporary Latin American Literature.** F This course focuses on the recent literature of Latin America. Masterpieces in the following genres are analyzed: Contemporary novels, poetry, and short stories. Oral presentations and/or research papers are required. Prerequisite: 332 or 333. *Mr. C. Johnson.*

### CULTURE

**310 Hispanic Culture in the United States.\*** F (Formerly 373) A study of the history and

culture of Hispanic groups in the United States, their political, social, and religious institutions, and their value systems. The course is planned to assist students in understanding the cultural contributions of each Hispanic group within the broader American culture. Reading materials include literary and non-literary sources. Prerequisite: 202. *Ms. E. Greenway.*

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

**395 Seminar.\***

### JANUARY 1995 INTERIM

*A catalog with the descriptions of all interim courses is available after October 1994.*

**W50 Interim in the Yucatan.** *O. Leder.*

**SPAN 100 Introduction to Spanish Language and Culture.** *E. Cortina.*

**SPAN 122 Intermediate Spanish.** *S. Cleverger, E. Greenway, L. C. Johnson.*

## THIRD WORLD DEVELOPMENT STUDIES

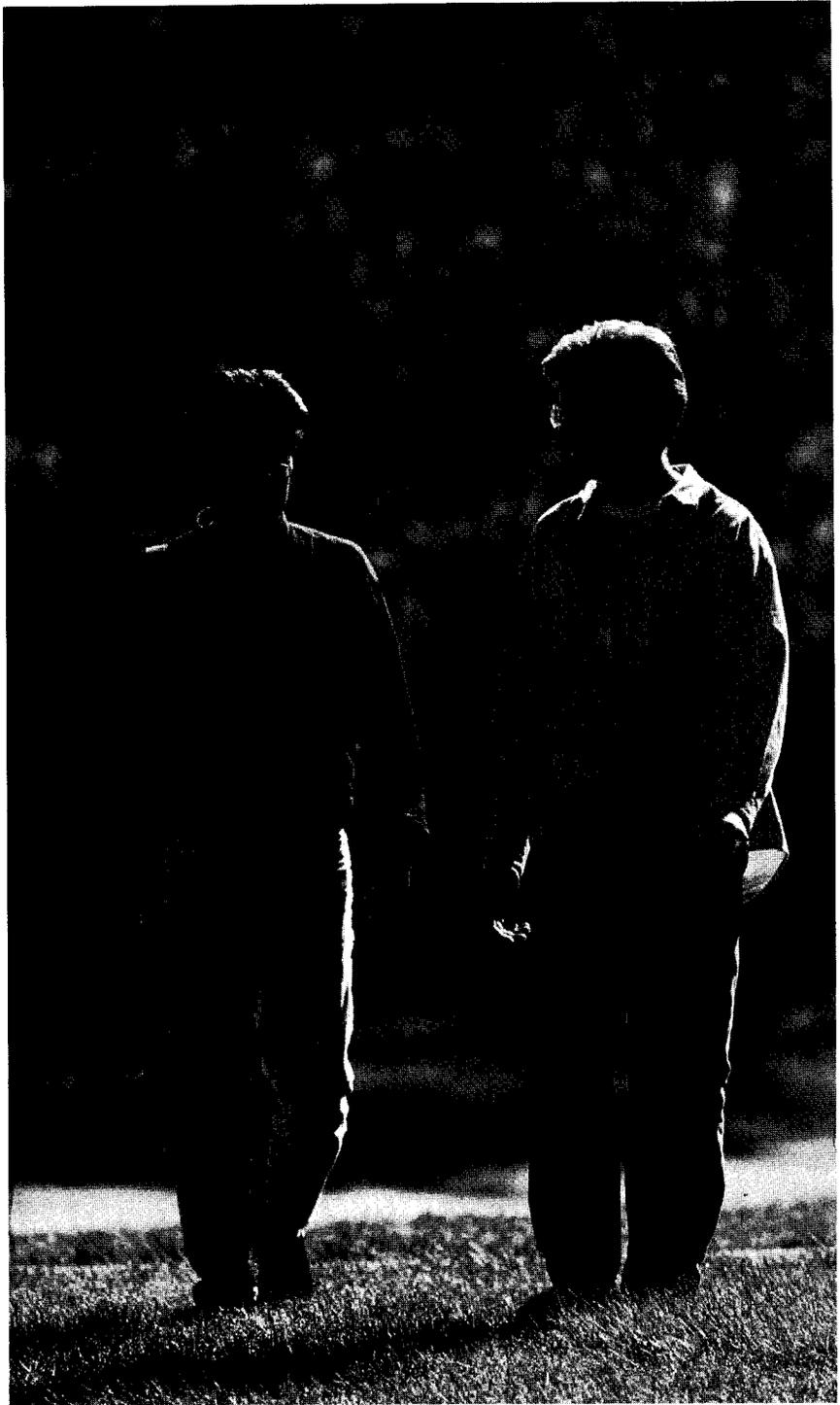
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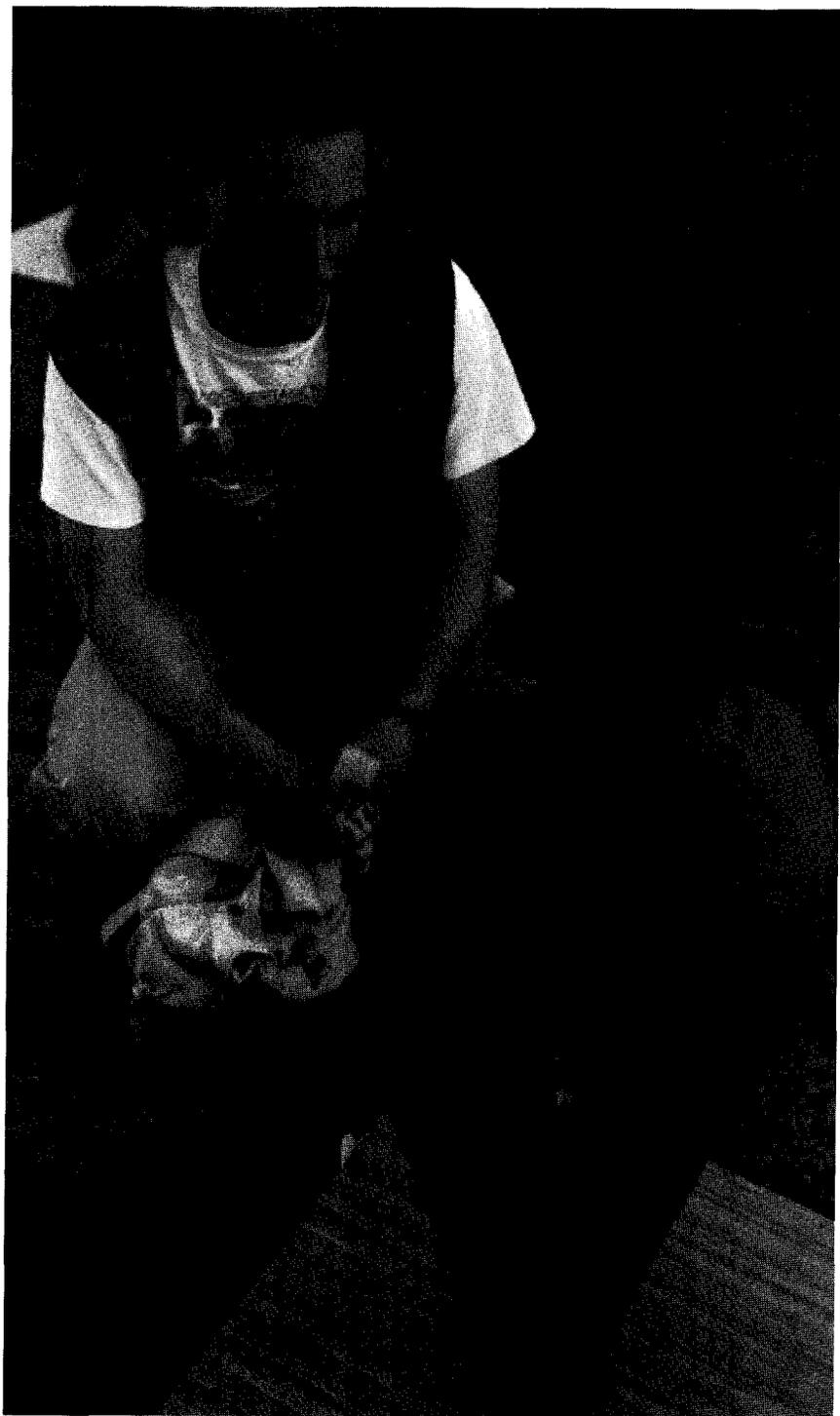
The Third World Development Studies minor consists of six courses, three required and three elective, which together comprise a coherent, planned, interdisciplinary program in development studies. The three required courses are Interdisciplinary 201, Sociology 253, and Interdisciplinary 395. The three electives are to be chosen with the approval of the program advisor from among CAS 330, Economics and Business 337, 338, Environmental Studies 201, 202, Geography 110, 210, History 203, 204, 205, 206, 207, 208, 231, 232, 233, 235, 236, Political Science 204, 205, 207, 214, 303, 309, Religion and Theology 252, 253, 351, 353, 354, Sociology 217, 308 and one appropriate on-campus interim course. Participation in off-campus experiences in the Third World is normally expected. Up to three course units from semester-long Third World programs may apply to the minor (see courses listed below). One off-campus interim in the Third World may apply. The program director is Mr. Roland Hoksbergen of the Economics and Business Department. Along with Mr. Hoksbergen, Mr. L. Lugo of the Political Science Department and Mr. D. Wilson of the Sociology Department serve as program advisors.

**201 Introduction to Third World Development.** S. And introduction to life in the world's low income countries and to competing theoretical perspectives on development and change. The course addresses cultural, social, political, religious, economic, and environmental elements of people's lives in the Third World. It also surveys such dominant perspectives on development as modernization, dependency, world systems, historical culturalism, and sustainable development, as well as addressing the question of how Christians think about human and social progress. Prerequisite: sophomore status.

SOC 253 See Sociology for a complete course description.

**395 Seminar in International Development Studies.** F A study of some of the major current problems and issues in development. The course has three main objectives: first, to acquaint students with the current state of the debate on development; second, to analyze the ethical foundations of the various prominent voices in the debate; and third, to cultivate Christian thinking on development questions. Emphasis is placed on oral and written reports and on a senior research project. Prerequisite: Senior International Development Studies minor status.





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L. Louters, L. Nyhoff, P. Tigchelaar,  
G. Triezenberg, One student.
- Academic Standards Committee*,  
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D. Ellens, C. Hartemink,  
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C. Feenstra, A. Post, Academic  
representative, One older student, Two  
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M. Doornbos (Alternate), J. Faber,  
J. Gemmen, D. Guthrie, A. Joose,  
D. Koning, D. Laverell, K. Muyskens,  
J. Timmer, N. Vogelzang, One addi-  
tional student (and two alternates).
- Animal Care and Use Committee*, R. Nyhof,  
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D. Vroon, D. Zuidema, One additional  
student.
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*Governing Board*, J. Van Zytveld, **Chair**,  
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C. Otten, J. Timmerman, G. Van Harn,  
R. Wells, One alum, BOT member.
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Six students.
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One additional student.
- Committee on Committees*, A. J. Diekema,  
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P. Zwier.
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Q. Schultze, C. Smidt, E. Van Kley.
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- Committee on Gender Equity (ad hoc)*,  
C. Beversluis, **Co-Chair**, M. Schutten  
**Co-Chair**, C. Byl, L. Dykstra, G. Ermer,  
M. Lind, W. Romanowski,  
G. Triezenberg, M. Viehl, S. Wykstra.
- Committee on Scholarships and Financial  
Aid*, D. Cook, **Chair**, D. Ellens,  
C. Hartemink, W. Hubers, D. Kuiper,  
H. Slenk, D. Van Baak, D. Van Beek,  
Y. Van Ee, One alum, One additional  
student.
- Communicable Disease Prevention Commit-  
tee*, E. Baits, M. Dykstra, M. Flikkema,  
N. Meyer.
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**Secretary**, B. De Vries, J. Faber,  
B. Lipscomb, B. Mansfield, A. Orteza,  
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C. Walhout, **Chair**, R. Fortner,  
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M. Remer, J. Timmer, G. Van Anandel,  
G. Van Harn, C. Young, BOT member,  
One student, One alum.
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S. Koppendrayer, K. Kuipers,  
J. Timmer, One student.

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student.

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Vliet, J. Vroom, BOT member,  
Community pastor.

*Panel on Harassment, C. Bellows, Chair,*

D. Freeberg, L. Schreur, G. Triezenberg,  
S. Wykstra, One student.

*Priorities Committee, T. Jager, Chair,*

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J. B. De Jong, A. J. Diekema,  
D. Guikema, P. Harkema, A. Leegwater,  
J. Primus, G. Van Harn, Two BOT  
members.

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S. Etheridge, R. Nyhof, F. Roberts,  
R. Slager, F. Speyers.

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K. Fyneweaver,  
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- Communication Arts and Sciences, Randall Bytwerk, *chair*
- English, Gary Schmidt, *chair*
- French, Glenn Fetzer, *chair*
- Germanic Languages, Wallace Bratt, *chair*
- Music, John Worst, *chair*
- Spanish, James Lamse, *acting chair*

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- Psychology, Martin Bolt, *chair*
- Sociology and Social Work, Donald Wilson, *chair*

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- Physics, Roger Griffioen, *chair*

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- History, James Bratt, *chair*
- Philosophy, Gregory Mellema, *acting chair, fall semester*; Lambert Zuidervaart, *chair, spring semester*
- Religion and Theology, John Primus, *chair*, Louis Vos, *acting chair, spring semester*

# 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

- Henry Bengelink, M.S.  
*Assistant Professor of Biology, Emeritus*
- Nicholas H. Beversluis, Th.B., Th.M.,  
M.A., Ed.D.  
*Professor of Education, Emeritus*
- Kathryn Blok, M.A., Ed.S., Ph.D.  
*Professor of Education, Emerita*
- Edgar G. Boevé, M.S.D.  
*Professor of Art, Emeritus*
- Erвина Boevé, M.A.  
*Professor of Communication Arts and  
Sciences, Emerita*
- Bette D. Bosma, M.A., Ph.D.  
*Professor of Education, Emerita*
- James P. Bosscher, M.A., Ph.D.  
*Professor of Engineering, Emeritus*
- John H. Bratt, Th.B., Th.M., S.T.M., Th.D.  
*Professor of Religion and Theology,  
Emeritus*
- Herman H. Broene, Ph.D.  
*Professor of Chemistry, Emeritus*
- Elsa Cortina, Doctora en Pedagogia, M.A.  
*Professor of Spanish, Emerita*
- John L. De Beer, M.A., Ed.D.  
*Professor of Education, Emeritus*
- Willis P. De Boer, D.Th.  
*Professor of Religion and Theology,  
Emeritus*
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*Professor of Political Science, Emeritus*
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*Associate Professor of Music, Emeritus*
- Thedford, P. Dirkse, M.A., Ph.D.  
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- Bernard J. Fridsma, Sr., M.A., Ph.D.  
*Professor of Germanic Languages,  
Emeritus*
- Alan I. Gebben, M.A.T., MS., Ph.D.  
*Professor of Biology, Emeritus*
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*Associate Professor of Music, Emeritus*
- Samuel E. Greydanus, M.A.  
*Professor of History, Emeritus*
- George G. Harper, M.A., Ph.D.  
*Professor of English, Emeritus*
- Cornelius P. Hegewald, M.A., D.A.G.  
*Professor of Germanic Languages,  
Emeritus*
- William C. Hendricks, M.Ed.  
*Associate Professor of Education,  
Emeritus*
- Henry Hoeks, Ed.D.  
*Professor of Religion and Theology,  
Emeritus*
- Academic Administration Associate,  
Emeritus*
- Henry P. Ippel, M.A., Ph.D.  
*Professor of History, Emeritus*
- Lester B. Ippel  
*Controller, Emeritus*
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*Professor of Education, Emerita*
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*Professor of Mathematics and Computer  
Science, Emeritus*
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*Professor of Germanic Languages,  
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*Librarian, Emeritus*
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Computer Science, Emeritus*
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- Peter Oppewal, M.A., Ph.D.  
*Professor of English, Emeritus*

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- Arthur J. Otten, D.del'U  
*Professor of French, Emeritus*
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*Professor of English, Emerita*
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*Professor of Classical Languages, Emeritus*
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*Vice President for Student Affairs, Emeritus*  
*Chaplain, Emeritus*
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*Professor of Psychology, Emeritus*
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*Professor of Business, Emeritus*
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*Professor of Psychology, Emeritus*
- Theodore A. Rottman, M.A., Ph.D.  
*Professor of Sociology, Emeritus*
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*Professor of Philosophy, Emeritus*
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*Associate Professor of Music, Emerita*
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*Professor of Psychology, Emeritus*
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*Professor of Mathematics, Emeritus*
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*Librarian, Emerita*
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*Professor of Sociology and Social Work, Emeritus*
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*President, Emeritus*
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*Professor of Physical Education, Emeritus*
- William K. Stob, B.D., Th.M., Ed.D.  
*Dean of Student Life, Emeritus*
- Roger J. Stouwie, M.A., Ph.D.  
*Professor of Psychology, Emeritus*
- Leonard Sweetman, Jr., Th.B.  
*Professor of Religion and Theology, Emeritus*
- Bernard J. Ten Broek, M.A., Ph.D.  
*Professor of Biology, Emeritus*
- Henrietta Ten Harmsel, M.A., Ph.D.  
*Professor of English, Emerita*
- Richard R. Tiemersma, M.A., Ph.D.  
*Professor of English, Emeritus*
- John J. Timmerman, M.A., Ph.D.  
*Professor of English, Emeritus*
- David B. Tuuk, M.A.  
*Professor of Physical Education, Emeritus*
- Marten Vande Guchte, M.Ed., Ph.D.  
*Professor of Communication Arts and Sciences, Emeritus*
- John Vanden Berg, M.A., Ph.D.  
*Vice President for Academic Administration, Emeritus*
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*Professor of Engineering, Emeritus*
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*Professor of English, Emeritus*
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*Director of Career Development, Emeritus*
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*Professor of Religion and Theology, Emeritus*
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*Professor of Political Science, Emeritus*
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*Professor of Chemistry, 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*
- †Joel C. Adams, M.S., Ph.D. (Pittsburgh, 1986, 1988)  
*Associate Professor of Computer Science*
- Gregg H. Afman, M.A. (Central Michigan, 1983), Ed.D. (Brigham Young, 1988)  
*Professor of Physical Education*
- Roy M. Anker, M.A. (Illinois, 1968), Ph.D. (Michigan State, 1973)  
*Professor of English*
- Debra L. Bakker, M.A. (Western Michigan, 1989)  
*Assistant Professor of Physical Education*
- Martinus A. Bakker, M.A. (University of South Africa, 1967), Ph.D. (Open Universiteit, 1987)  
*Professor of Germanic Languages*
- Claude-Marie Baldwin, M.A., Ph.D. (Michigan State, 1977, 1984)  
*Professor of French*

- \*\*Henry J. Baron, M.A., (Michigan, 1966),  
Ph.D. (Illinois, 1972)  
*Professor of English*
- Lionel L. Basney, M.A., Ph.D. (Rochester,  
1968, 1971)  
*Professor of English*
- \*\*John D. Beebe, M.A. (South Dakota,  
1966), Ph.D. (Chicago, 1970)  
*Professor of Biology*
- Sharon J. Benner, M.S.N. (Case Western  
Reserve, 1984)  
*Adjunct Assistant Professor of Nursing*
- Claudia D. Beversluis, M.A., Ph.D. (Loyola  
University of Chicago, 1981, 1983)  
*Associate Professor of Psychology*
- Curtis L. Blankespoor, Ph.D. Candidate  
(Cornell, 1994)  
*Assistant Professor of Biology*
- Ronald L. Blankespoor, Ph.D. (Iowa  
State, 1971)  
*Professor of Chemistry*  
*Chair of the Department of Chemistry*
- Andrew R. Blystra, M.S.C.E. (Chicago,  
1982) Ph.D. Candidate (Western  
Michigan, 1994)  
*Professor of Engineering*
- Warren J. Boer, B.D. (Calvin Theological  
Seminary, 1963), M.A. (Princeton  
Theological Seminary, 1969),  
D.Min. (Fuller Theological  
Seminary, 1974)  
*Director, Broene Center for Counseling  
and Career Development*
- Martin Bolt, M.A., Ph.D. (Michigan State,  
1967, 1969)  
*Professor of Psychology*  
*Chair of the Department of Psychology*
- Robert Bolt, M.A. (Michigan, 1953),  
Ph.D. (Michigan State, 1963)  
*Professor of History*
- Helen Bonzelaar, M.A. (Western Michigan,  
1964), Ph.D. (Michigan State, 1984)  
*Professor of Art*
- Hessel Bouma III, Ph.D. (Texas, 1975)  
*Professor of Biology*
- James Bradley, Ph.D. (Rochester, 1974),  
M.S. (Rochester Institute of  
Technology, 1982)  
*Professor of Mathematics and Computer  
Science*
- Cheryl Kreykes Brandsen, M.S.W.  
(Michigan, 1981)  
*Associate Professor of Social Work*
- Al D. Bratt, M.S. (Michigan State, 1957),  
Ph.D. (Cornell, 1964)  
*Professor of Biology*
- James D. Bratt, Ph.D. (Yale, 1978)  
*Professor of History*  
*Chair of the Department of History*
- Kenneth D. Bratt, M.A., Ph.D. (Princeton,  
1973, 1985)  
*Professor of Classical Languages*  
*Chair of the Department of Classical  
Languages*
- Wallace H. Bratt, M.A., Ph.D. (Michigan,  
1956, 1966)  
*Professor of Germanic Languages*  
*Chair of the Department of Germanic  
Languages*
- Alice J. Briggs, M.S.N. (Michigan, 1981)  
*Adjunct Assistant Professor of Nursing*
- Daryl M. Brink, M.A. (Western Michigan,  
1968), Ph.D. (Michigan State, 1972)  
*Professor of Mathematics*
- John H. Brink, M.S., Ph.D. (Purdue,  
1972, 1974)  
*Professor of Psychology*
- Herbert J. Brinks, M.A., Ph.D. (Michigan,  
1961, 1965)  
*Curator, Colonial Origins Collection*
- Randall J. Brouwer, M.S.E.E., Ph.D.  
(Illinois-Urbana, 1988, 1991)  
*Assistant Professor of Engineering*
- W. Dale Brown, M.A. (Houston-Clear  
Lake, 1978), Ph.D. (Missouri, 1987)  
*Professor of English*
- Conrad J. Bult, M.A., M.A.L.S. (Michigan,  
1962, 1965)  
*Assistant Library Director for College-  
Related Matters*
- Randall J. Buursma, M.A. (Michigan  
State, 1986)  
*Student Academic Services*
- Randall L. Bytwerk, M.A., Ph.D.  
(Northwestern, 1973, 1975)  
*Professor of Communication Arts and  
Sciences*  
*Chair of the Department of Communica-  
tion Arts and Sciences*
- Barbara Carvill, M.A., Ph.D. (Toronto,  
1972, 1981)  
*Professor of Germanic Languages*
- James A. Clark, M.A., Ph.D. (Colorado,  
1974, 1977)  
*Professor of Geology*

- Kelly J. Clark, M.A. (Western Kentucky State, 1980), M.A., Ph.D. (Notre Dame, 1983, 1985)  
*Associate Professor of Philosophy*
- Sandra K. Clevenger, M.A. (Michigan State, 1974), Ph.D. (New York, 1987)  
*Professor of Spanish*
- David Cook, M.S.Acc. (Western Michigan, 1979), C.P.A.  
*Professor of Business*
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*College Chaplain*
- Scott A. Davison, M.A. (Ohio State, 1988), M.A., Ph.D. (Notre Dame, 1991, 1993)  
*Assistant Professor of Philosophy*
- Gordon L. De Blaeu, M.A., Ph.D. (Western Michigan, 1967, 1970)  
*Professor of Sociology*
- M. Joy De Boer, M.S.W. (Denver, 1972)  
*Director of Academic Advising*  
*Counselor in the Broene Center for Counseling and Career Development*
- Peter P. De Boer, M.A. (New Jersey State, 1952), M.A. (Iowa, 1961), Ph.D. (Chicago, 1968)  
*Professor of Education*
- David H. De Heer, Ph.D. (Arizona, 1972)  
*Professor of Biology*
- Jeanette Bult De Jong, M.Ed. (Toronto, 1973)  
*Vice President for Student Life*
- Peter Y. De Jong, M.A., Ph.D. (Western Michigan, 1969, 1972), M.S.W. (Michigan State, 1986)  
*Professor of Social Work*  
*Director of Social Work*
- Richard G. De Jong, S.M., Sc.D. (Massachusetts Institute of Technology, 1974, 1977)  
*Professor of Engineering*
- Roger L. De Kock, Ph.D. (Wisconsin, 1970)  
*Professor of Chemistry*
- Bert de Vries, B.D. (Calvin Theological Seminary, 1960), M.A., Ph.D. (Brandeis, 1965, 1967)  
*Professor of History*
- Robert L. De Vries, M.A., Ph.D. (Michigan, 1964, 1974)  
*Professor of Political Science*
- Derald D. De Young, M.M. (Eastman, 1965), Ph.D. (Minnesota, 1975)  
*Professor of Music*
- Gary W. De Young, Ph.D. (Utah, 1990)  
*Assistant Professor of Mathematics*
- Anthony J. Diekema, M.A., Ph.D. (Michigan State, 1958, 1965)  
*President*
- David J. Diephouse, M.A., Ph.D. (Princeton, 1971, 1974)  
*Professor of History*
- Steven P. Dirkse, M.S., Ph.D. Candidate (Wisconsin, 1990, 1994)  
*Assistant Professor of Mathematics and Computer Science*
- Mary Molewyk Doornbos, M.S. (Michigan, 1983), Ph.D. (Wayne State, 1993)  
*Associate Professor of Nursing*
- Edward R. Douma, M.A. (Western Michigan, 1973)  
*Associate Professor of Physical Education*
- Johanna Z. Duyst, M.A.L.S. (Michigan, 1973)  
*Librarian*
- Allen W. Emerson, M.A. (North Carolina-Chapel Hill, 1965)  
*Student Academic Services*
- Edward E. Ericson, Jr., M.A., Ph.D. (Arkansas, 1963, 1967)  
*Professor of English*
- Gayle E. Ermer, M.S.E. (University of Wisconsin, 1987)  
*Assistant Professor of Engineering*
- Mark Eshelman, M.S., Ph.D. (Iowa State University, 1984, 1987), M.Div. (Trinity Evangelical Divinity School, 1991)  
*Assistant Professor of Chemistry*
- Sharon A. Etheridge, M.S.N. (Grand Valley State, 1989)  
*Assistant Professor of Nursing*
- C. Stephen Evans, M.Phil., Ph.D. (Yale, 1971, 1974)  
*Professor of Philosophy*  
*William Spoelhof Scholar-in-Residence Chair*
- Jan E. Evans, M.A. (Emory, 1990)  
*Assistant Professor of Spanish*
- Cheryl J. Feenstra, M.S.N. (Wayne State, 1979)  
*Assistant Professor of Nursing*
- Susan M. Felch, M.A. (Wheaton, 1974), Ph.D. (Catholic University, 1991)  
*Assistant Professor of English*
- \*R. John D. Ferdinands, Ph.D. (Purdue, 1988)  
*Associate Professor of Mathematics*

- Glenn W. Fetzer, M.A. (Auburn, 1982),  
M.Phil., Ph.D. (City University of New  
York, 1984, 1988)  
*Associate Professor of French*  
*Chair of the Department of French*
- \*\*Earl D. Fife, M.A. (North Carolina-  
Greensboro, 1973), Ph.D. (Wesleyan,  
1977)  
*Professor of Mathematics*
- Mary E. Flikkema, M.S.N. (Grand Valley  
State, 1989)  
*Assistant Professor of Nursing*
- \*Robert S. Fortner, M.A. (Indiana, 1972),  
Ph.D. (Illinois, 1978)  
*Professor of Communication Arts and  
Sciences*
- Debra L. Freeberg, M.A. (Pittsburgh,  
1980)  
*Associate Professor of Communication  
Arts and Sciences*
- Tamara George, M.S.N. (Wayne State,  
1979)  
*Adjunct Assistant Professor of Nursing*
- Keith A. Grasman, M.S. (Virginia Poly-  
technic Institute and State University,  
1992)  
*Instructor in Biology*
- Terry M. Gray, Ph.D. (Oregon, 1985)  
*Associate Professor of Chemistry*
- Edna C. Greenway, M.A. (Texas Christian,  
1972), Ph.D. (Michigan State, 1985)  
*Professor of Spanish*
- Anna Greidanus Probes, M.F.A. (Michigan  
State, 1988)  
*Associate Professor of Art*
- Arie J. Griffioen, M.A. (Iowa, 1983),  
Ph.D. (Marquette, 1988)  
*Associate Professor of Religion and  
Theology*
- Roger D. Griffioen, Ph.D. (Purdue, 1960)  
*Professor of Physics*  
*Chair of the Department of Physics*
- Dale J. Guikema, M.B.A. (Michigan,  
1964), C.P.A. (1968)  
*Vice President for Administration and  
Finance*
- David S. Guthrie, M.A. (Pittsburgh  
Theological, 1985), Ph.D. (Penn State,  
1990)  
*Dean of Student Development*  
*Adjunct Assistant Professor of Sociology*
- Stanley L. Haan, Ph.D. (Colorado, 1983)  
*Professor of Physics*
- John E. Hamersma, M.S.M., S.M.D. (Union  
Theological Seminary, New York, 1952,  
1961)  
*Professor of Music*  
*College Organist*
- Lee P. Hardy, M.A., Ph.D. (Duquesne, 1979,  
1988), M.A. (Pittsburgh, 1980)  
*Professor of Philosophy*
- John E. Hare, B.A. hons. (Balliol College,  
1971), Ph.D. (Princeton, 1975)  
*Professor of Philosophy*
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*Assistant Professor of Religion and  
Theology*
- Peter M. Harkema, Ph.D. (Michigan State,  
1991)  
*Vice President for Enrollment Services*
- George Harris, M.A. (Michigan, 1959),  
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*Professor of Classical Languages*
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*Student Academic Services, Acting  
Director*
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1984)  
*Dean of Residence Life*
- Lawrence R. Herzberg, M.A. (Indiana,  
1980)  
*Associate Professor of Japanese*
- Donald R. Hettinga, M.A., Ph.D. (Chicago,  
1977, 1983)  
*Professor of English*
- David A. Hoekema, Ph.D. (Princeton,  
1981)  
*Professor of Philosophy*  
*Dean for the Contextual Disciplines and  
for the Natural Sciences and Mathematics*
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1978), Ph.D. (Iowa, 1984)  
*Professor of Engineering*  
*Chair of the Department of Engineering*
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gan State, 1972, 1975)  
*Professor of Education*
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Dame, 1981, 1986)  
*Professor of Economics*
- David J. Holquist, M.A. (Michigan, 1967),  
Ed.S. (Michigan State, 1974)  
*Professor of Communication Arts and  
Sciences*

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*Professor of Sociology*
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*Professor of Religion and Theology*
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*Professor of Physical Education*  
*Director of Athletics—Men*
- \*\*Douglas A. Howard, M.A., Ph.D. (Indiana, 1982, 1987)  
*Associate Professor of History*
- Carl J. Huisman, M.F.A. (Michigan State, 1967)  
*Professor of Art*
- Gertrude A. Huizenga, M.A. (Ohio State, 1963), M.Mus., Ph.D. (Michigan State, 1969, 1980)  
*Professor of Music*
- Thomas L. Jager, M.S., Ph.D. (Chicago, 1967, 1971)  
*Professor of Mathematics and Computer Science*
- Randal M. Jelks, M.Div. (Mc Cormick Theological Seminary, 1983)  
*Director of Academic Multicultural Affairs*
- Robert A. Jensen, M.F.A. (Ohio, 1952)  
*Professor of Art*  
*Chair of the Department of Art*
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*Assistant Professor of Spanish*
- Anamarie L. Jooose, M.A., Ed.S. (Michigan State, 1971, 1972)  
*Counselor in the Broene Center for Counseling and Career Development*
- Wayne G. Jooose, M.A. Ph.D. (Michigan State, 1965, 1975)  
*Professor of Psychology*
- Carl W. Kaiser, M.Mus. (Catholic University, 1961)  
*Associate Professor of Music*
- Richard T. Karppinen, M.B.A. (Pittsburgh, 1964)  
*Associate Professor of Business*
- Debora A. Kiekover, M.B.A. (Western Michigan, 1990)  
*Assistant Professor of Economics and Business*
- Hye Sook Kim, M.M. (Seoul National University, 1981), M.M., D.M.A. (Peabody Conservatory, 1983, 1990)  
*Assistant Professor of Music*
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*Professor of Biology*
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*Professor of Philosophy*
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*Professor of Mathematics*
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*Professor of Communication Arts and Sciences*
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*Professor of Education*
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*Professor of Physics*
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*Professor of English*
- Kenneth J. Kuipers, M.B.A. (Michigan State, 1968)  
*Professor of Business*
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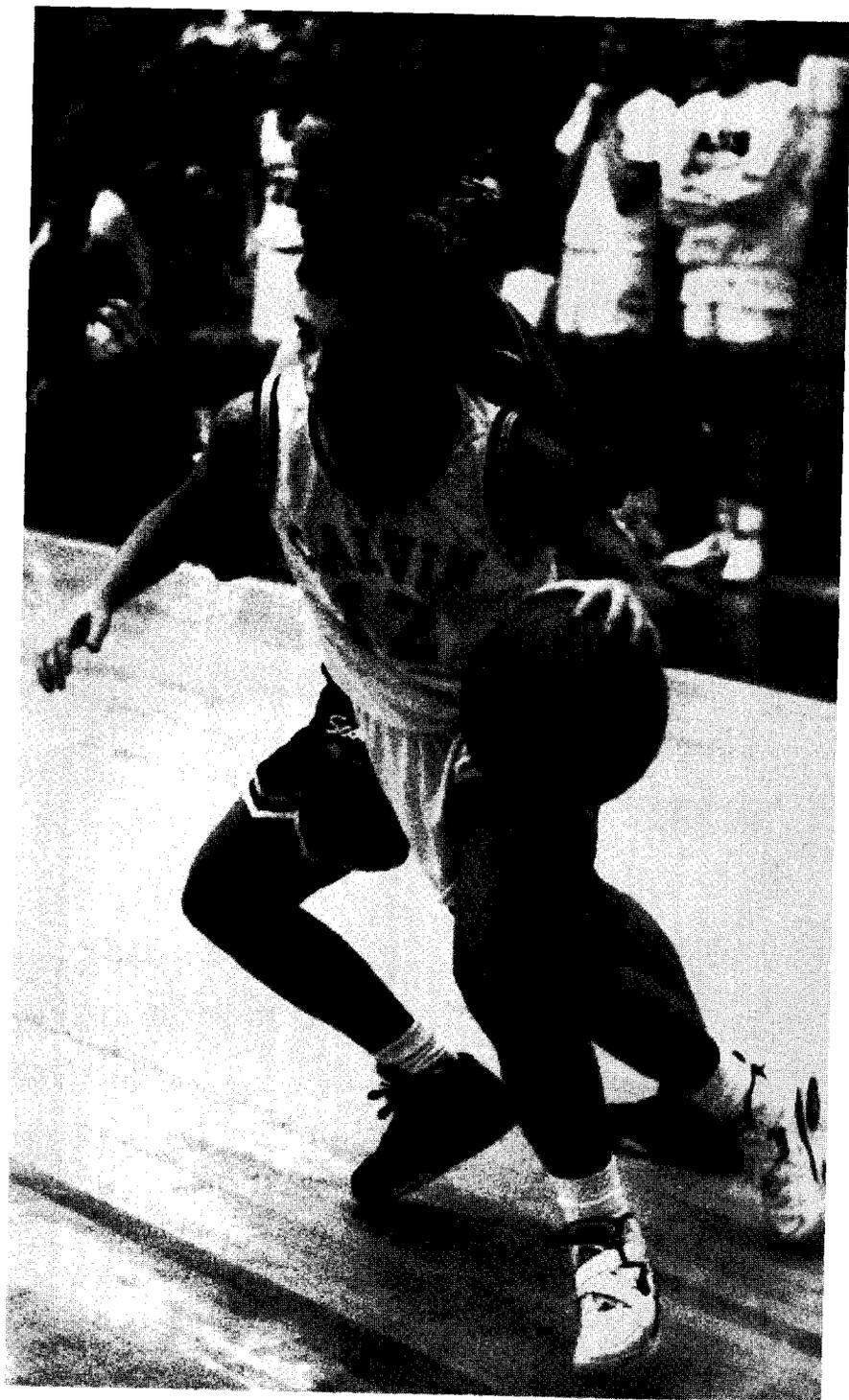
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*Associate Professor of Psychology*
- Arie Leegwater, Ph.D. (Ohio State, 1967)  
*Professor of Chemistry*
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*Professor of Mathematics and Computer Science*
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*Librarian*
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*Professor of Chemistry*
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*Associate Professor of Sociology*
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*Professor of Political Science*
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*Assistant Professor of Art*
- Leslie A. Mathews, M.A. (Michigan State, 1976)  
*Assistant Professor of French*
- Christopher A. McGrath, M.A. (Michigan State, 1990)  
*Instructor in Spanish*
- Gregory F. Mellema, Ph.D. (Massachusetts, 1974), M.B.A. (Michigan, 1978)  
*Professor of Philosophy*  
*Acting Chair of the Department of Philosophy, Fall Semester*
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*Professor of Physical Education*
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*Professor of History*
- Edward Miller, M.A., Ph.D. (Indiana, 1976, 1991)  
*Professor of Spanish*
- Susan Mlynarczyk, M.S.N. (Wisconsin, 1979)  
*Adjunct Assistant Professor of Nursing*
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*Professor of Economics*
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*Professor of Education*
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*Associate Professor of Music*
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*Associate Professor of Chemistry*
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*Associate Professor of Chemistry*
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*Associate Professor of English*
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*Professor of Biology*
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*Professor of Mathematics and Computer Science*
- Chris S. Overvoorde, M.F.A. (Michigan, 1966)  
*Professor of Art*
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*Professor of Political Science*
- Jeffrey R. Pettinga, M.A. (Michigan State, 1968)  
*Assistant Professor of Physical Education*
- Kenneth Piers, B.Sc., hons., Ph.D. (Alberta, 1963, 1966)  
*Professor of Chemistry*
- Alvin C. Plantinga, M.A. (Michigan, 1955), Ph.D. (Yale, 1958)  
*Adjunct Professor of Philosophy*

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Theology*
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Theological Seminary, 1981), M.A.,  
Ph.D. (Claremont Graduate School,  
1988, 1992)  
*Associate Professor of Religion and  
Theology*
- Brian E. Porter, M.B.A. (Michigan, Flint,  
1990), Ph.D. Candidate (Indiana,  
1994)  
*Associate Professor of Economics and  
Business*
- Arden R. Post, M.Ed. (Beaver, 1979),  
Ed.D. (Cincinnati, 1985)  
*Professor of Education*
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Technological University, 1983)  
*Assistant Professor of Engineering*
- \*\*John H. Primus, B.D. (Calvin Theologi-  
cal Seminary, 1957), D.Th. (Vrije  
Universiteit, Amsterdam, 1960)  
*Professor of Religion and Theology*
- Rick D. Railsback, M.A., Ph.D. Candidate  
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*Assistant Professor of History*
- \*Delvin L. Ratzsch, M.A., Ph.D.  
(Massachusetts, 1974, 1975)  
*Professor of Philosophy*
- David D. Reiter, M.A.R. (Westminster  
Theological Seminary, 1987), M.A.  
(Nebraska, 1989), Ph.D. (Nebraska,  
1993)  
*Assistant Professor of Philosophy*
- Glenn A. Remelts, M.L.S. (Western  
Michigan, 1979), M.A. (Kansas State,  
1989)  
*Librarian*
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State, 1962, 1968)  
*Professor of Sociology  
Director of the Social Research Center*
- Frank C. Roberts, B.D. (Calvin Theologi-  
cal Seminary, 1965), M.A., Ph.D.  
(Vanderbilt, 1969, 1973)  
*Professor of History  
Dean for the Social Sciences and for  
Languages, Literature, and Arts*
- Shirley J. Roels, M.B.A. (Michigan, 1977),  
C.M.A., 1979, Ph.D., (Michigan State,  
1993)  
*Professor of Business  
Chair of the Department of Economics  
and Business  
Director of Calvin Accelerated Program*
- William D. Romanowski, M.A.  
(Youngstown State, 1981), Ph.D.  
(Bowling Green State, 1990)  
*Associate Professor of Communication  
Arts and Sciences*
- Sandra Rozendal, M.S. (Michigan, 1991)  
*Assistant Professor of Nursing*
- Karen E. Saupe, M.A. (Wright State, 1987),  
Ph.D. Candidate (Rochester, 1994)  
*Assistant Professor of English*
- Kurt C. Schaefer, A.M., Ph.D. (Michigan,  
1982, 1984)  
*Professor of Economics and Business*
- Gary D. Schmidt, M.A., Ph.D. (Illinois,  
1981, 1985)  
*Professor of English  
Chair of the Department of English*
- John R. Schneider, M.A. (Fuller  
Theological Seminary, 1976), Ph.D.  
(Cambridge, 1987)  
*Professor of Religion and Theology*
- Quentin J. Schultze, M.A., Ph.D. (Illinois,  
1976, 1978)  
*Professor of Communication Arts and  
Sciences*
- Mary C. Schutten, M.A. (California State-  
Long Beach, 1982)  
*Associate Professor of Physical Education  
Chair of the Department of Physical  
Education*
- Allen L. Shoemaker, M.S., Ph.D. (Illinois,  
1979, 1980)  
*Professor of Psychology*
- Debra L. Sietsema, M.S.N. (Grand Valley,  
1992)  
*Adjunct Assistant Professor of Nursing*
- Ronald J. Sjoerdsma, M.A. (Iowa, 1979)  
*Assistant Professor of Education*
- Raymond L. Slager, M.S. (Western  
Michigan, 1970), C.P.A., 1974  
*Professor of Business*
- Howard J. Slenk, M.A., Ph.D. (Ohio State,  
1961, 1965)  
*Professor of Music*

- Robert P. Smart, Ph.D. Candidate  
(Michigan State, 1994)  
*Visiting Assistant Professor of Chemistry*  
*Dreyfus Fellow*
- Corwin E. Smidt, M.A., Ph.D. (Iowa, 1971,  
1975)  
*Professor of Political Science*  
*Chair of the Department of Political  
Science*
- J. William Smit, M.A., Ph.D. (Michigan,  
1959, 1964)  
*Professor of Sociology*
- Marsha Smit, M.S.N. (Grand Valley, 1992)  
*Adjunct Assistant Professor of Nursing*
- Charles K. Smith, M.M. (Missouri, 1963),  
Ed.D. (Arizona State, 1973)  
*Adjunct Professor of Music*
- \*Franklin D. Speyers, M.S. (Pratt Institute,  
1977)  
*Associate Professor of Art*
- Calvin R. Stapert, M.A., Ph.D. (Chicago,  
1968, 1973)  
*Professor of Music*
- Ralph F. Stearley, M.A. (Utah, 1985), Ph.D.  
(Michigan, 1990)  
*Associate Professor of Geology*
- Steven D. Steenwyk, M.S., Ph.D.  
(Michigan State, 1978, 1980)  
*Professor of Physics*
- LeRoy D. Stegink, M.A., Ph.D. (Michigan  
State, 1970, 1979)  
*Professor of Education*  
*Chair of the Department of Education*  
*Director of Teacher Education*
- Steven J. Stegink, M.A. (William Paterson  
College, 1979), Ph.D. (Duke, 1985)  
*Professor of Science Education and  
Biology*
- R. Scott Stehouwer, M.A., Ph.D. (Wayne  
State, 1977, 1978)  
*Professor of Psychology*
- Andrea L. Sterk, M.T.S. (Regent, 1988),  
Ph.D. Candidate (Princeton, 1994)  
*Assistant Professor of History*
- William R. Stevenson, Jr., M.A. (East  
Carolina, 1978), Ph.D. (Virginia, 1984)  
*Professor of Political Science*
- Michael J. Stob, M.S., Ph.D. (Chicago,  
1975, 1979)  
*Professor of Mathematics*  
*Chair of the Department of Mathematics  
and Computer Science*
- Charles E. Strikwerda, M.A. (Wisconsin,  
1969), Ph.D. (Kentucky, 1977)  
*Professor of Political Science*
- Gloria G. Stronks, M.A. (Western  
Kentucky, 1968), Ed.D. (Northern  
Illinois, 1981)  
*Professor of Education*
- Peter P. Szto, M.A. (Michigan State, 1985),  
M.A.R. (Westminster Theological  
Seminary, 1986), M.S.W., A.B.D.  
(Pennsylvania, 1992, 1994)  
*Assistant Professor of Sociology and  
Social Work*
- Gary W. Talsma, M.S., Ph.D. (Purdue,  
1975, 1986)  
*Professor of Mathematics*
- Robert H. Terborg, M.A., Ph.D. (Michigan  
State, 1966, 1968)  
*Professor of Psychology*
- Thomas R. Thompson, M.Div., Th.M.  
(Calvin Theological Seminary, 1986,  
1988)  
*Assistant Professor of Religion and  
Theology*
- John P. Tiemstra, Ph.D. (Massachusetts  
Institute of Technology, 1975)  
*Professor of Economics*
- Peter V. Tigchelaar, M.S., Ph.D. (Illinois,  
1966, 1970)  
*Professor of Biology*
- James R. Timmer, M.A. (Michigan, 1964),  
Ph.D. (Utah, 1974)  
*Professor of Physical Education*
- John H. Timmerman, M.A., Ph.D. (Ohio,  
1971, 1973)  
*Professor of English*
- Barbara Timmermans, M.S. (Michigan,  
1983)  
*Assistant Professor of Nursing*
- Steven R. Timmermans, M.A., Ed.S., Ph.D.  
(Michigan, 1983, 1983, 1985)  
*Associate Professor of Education*  
*Associate Dean for Instruction*
- G. Dale Topp, M.Mus., Ph.D. (Michigan,  
1960, 1967)  
*Professor of Music*
- Glenn E. Triesenberg, M.S.W. (George  
Williams College, 1973), M.B.A.  
(Northwestern, 1986)  
*Director of Career Development*
- Glen E. Van Andel, M.A. (North Carolina,  
1969), Re.D. (Indiana, 1986)  
*Professor of Physical Education*

- David A. Van Baak, M.A., Ph.D. (Harvard, 1975, 1979)  
*Professor of Physics*
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*Professor of Business*
- William J. Vande Kopple, M.A., Ph.D. (Chicago, 1973, 1980)  
*Professor of English*
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*Professor of Communication Arts and Sciences*
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*Instructor in Engineering*
- Scott H. Vander Linde, M.A., Ph.D. (Notre Dame, 1984, 1989)  
*Professor of Economics*
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*Librarian*
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*Adjunct Professor of Business*
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*Assistant Professor of Communication Arts and Sciences*
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*Professor of Chemistry*
- Randall G. Van Dragt, M.S. (Cornell, 1971), Ph.D. (Rhode Island, 1986)  
*Professor of Biology*  
*Director of Ecosystem Preserve*
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*Associate Professor of Education*
- Gordon L. Van Harn, M.S., Ph.D. (Illinois, 1959, 1961)  
*Professor of Biology*  
*Senior Vice President and Provost*
- Christiana van Houten, M.A. (Chicago Divinity School, 1974), Ph.D. (Notre Dame, 1989)  
*Associate Professor of Religion and Theology*
- Dale K. Van Kley, M.A., Ph.D. (Yale, 1964, 1970)  
*Professor of History*
- Edwin J. Van Kley, M.A., Ph.D. (Chicago, 1959, 1964)  
*Professor of History*
- Lambert J. Van Poolen, M.S.M.E., Ph.D. (Illinois Institute of Technology, 1965, 1969), P.E. (State of Illinois, 1971)  
*Professor of Engineering*
- Howard J. Van Till, Ph.D. (Michigan State, 1965)  
*Professor of Physics*
- William E. Van Vugt, M.A. (Kent State, 1981), Ph.D. (London School of Economics, 1986)  
*Professor of History*
- George Van Zwalenberg, M.A. (Florida, 1955), Ph.D. (California-Berkeley, 1968)  
*Professor of Mathematics*
- John B. Van Zytveld, M.S., Ph.D. (Michigan State, 1964, 1967)  
*Professor of Physics*
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*Professor of Mathematics*
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*Professor of Nursing*  
*Chair of the Department of Nursing*
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*Professor of Religion and Theology*  
*Acting Chair of the Department of Religion and Theology, Spring Semester*
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*Professor of English*
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*Professor of English*
- Dean A. Ward, Ph.D. (Virginia, 1987)  
*Professor of English*  
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*Director of the Calvin Center for Christian Scholarship*
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*Professor of Classical Languages*
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*Professor of Sociology*  
*Chair of the Department of Sociology and Social Work*
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*Director of Computing Services*
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*Professor of Mathematics*
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*Professor of Art*
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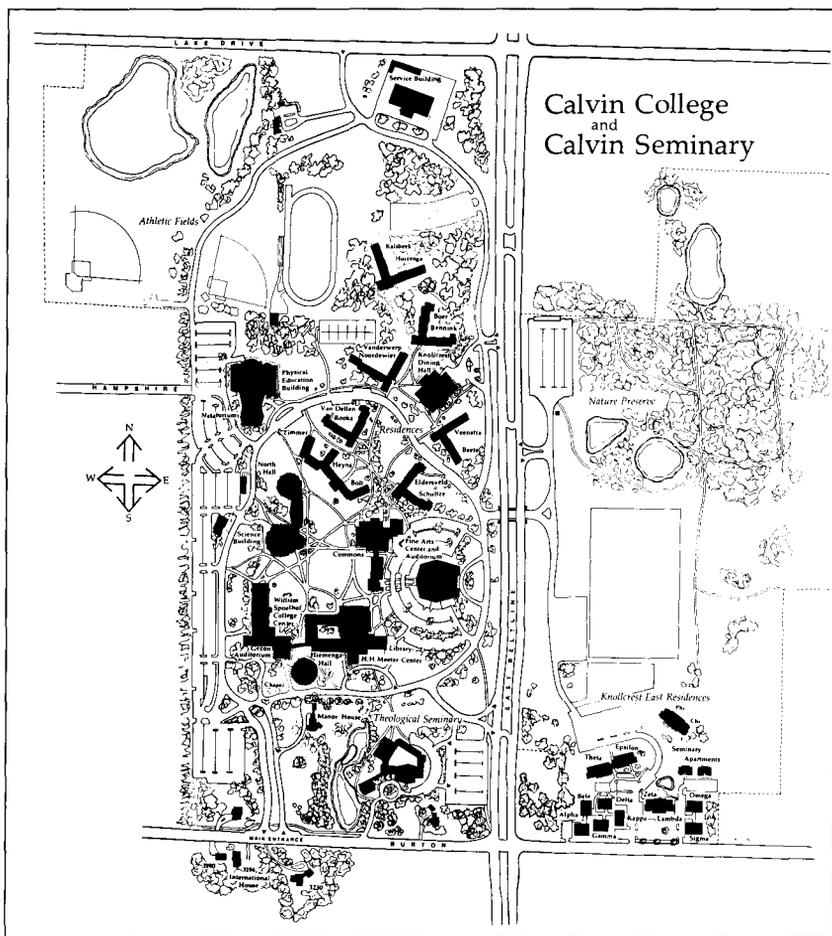
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# CAMPUS MAP



## ADDRESSES

Calvin College is located on the East Beltline (M37) between Lake Drive and Burton Street. Mail for all offices should be addressed: Calvin College, 3201 Burton St., S.E., Grand Rapids, Michigan 49546. When possible, the specific office or purpose should be indicated on the envelope—Admissions, Scholarships, Housing, etc. Mail for students should be addressed: Student's name, student's residence hall, Calvin College, 3201 Burton St., S.E., Grand Rapids, Michigan 49546. The address of the Calvin Theological Seminary is 3233 Burton St., S.E., Grand Rapids, Michigan 49546.

Although each office and student room has its own phone number, any office or room can be reached through the general college and seminary phone number: (616) 957-6000. The FAX number for the college is: (616) 957-8551.