379 **Research Topics in Christian Worship** (3). Participation in collaborative research on the theology, history, and practice of Christian worship. Topics are chosen in conjunction with the scholarly initiatives of the Calvin Institute of Christian Worship. Enrollment open to qualified juniors and seniors. Prerequisites: Biblical and Theological Foundations Core and permission of the instructor.

396 **Religion Seminar** (3). S. An advanced seminar for senior majors in religion and other qualified students. This course considers significant issues in biblical, theological, and religious studies and requires a major research paper. Prerequisites: Three electives in religion and for non-majors, permission of the instructor.

Graduate Courses

510 **Theological and Philosophical Hermeneutics** (3). 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.

580 **Perspectives, Programs, and Practices in Bible and Religion Curriculum** (3). 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.

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

Science Education Studies

Professor J. Jadrich
Associate Professors K. Bergwerff, C. Bruxvoort

Courses listed under Science Education Studies are open to all Calvin students meeting the course prerequisites, although their primary intent is to serve students in the Teacher Education Program. Students wanting both certification and the flexibility to teach any science course at the middle or high school level must major (secondary education students) or at least minor (elementary education students) in Integrated Science Studies. More detailed descriptions of these programs can be found in the Teacher Education Program Guidebook.

INTEGRATED SCIENCE STUDIES MINOR—ELEMENTARY EDUCATION

Designed for students in the Elementary Education Program wishing to minor in science.

A minimum of 26 semester hours of science must be taken, including the following:

Biology 112
Chemistry 101
Geology 120
Physics 212
SCES 112
SCES 313
One additional advisor-approved elective in science

INTEGRATED SCIENCE STUDIES MAJOR—ELEMENTARY EDUCATION

A minimum of 38 semester hours of science must be taken, including all the courses prescribed for the elementary education minor, plus the following:

Astronomy 110 or 211
Biology 115
One additional advisor-approved elective in science

COMPREHENSIVE INTEGRATED SCIENCE STUDIES MAJOR-SECONDARY EDUCATION

This major program of study is not the one recommended for most students. The program for the regular integrated science major, plus a minor in a science discipline (listed subsequent to this one), is the recommended major for most students. Students completing the comprehensive major described here are not required to complete an additional minor area of study for certification.

Biology 141
Biology 242
Biology 243
Chemistry 103
Chemistry 104
Chemistry 253
Geology 120
Geology 152
Astronomy 110, 111, or 211
Physics 221
Physics 222
Physics 134
SCES 214
SCES 314
SCES 359
A total of at least two semesters of any combination of the following courses. (Two semesters of enrollment in the same course is also allowed.) BIOL 295, CHEM295, or PHYS 195

Cognates
Math 132 or 161

INTEGRATED SCIENCE STUDIES MAJOR—SECONDARY EDUCATION

This is the preferred program for all secondary education students wishing to obtain teaching certification in all the sciences. Students pursuing this major must also complete a minor in one of the four science disciplines (biology, chemistry, earth/space science, or physics). Courses for this integrated science major are the same as those listed for the comprehensive integrated science major described previously. However, students pursuing this major do not need to take any courses from the comprehensive integrated science program list that correspond to the department in which they are also pursuing a minor or that are also included in the required course listing for that minor. Students must complete all the courses listed for their science minor.

COURSES

112 **Physical and Earth Science for Elementary School Teachers** (4). * F and S. This course uses a guided inquiry approach in surveying topics in chemistry, earth science, and physics that are relevant for teaching in elementary school. The course is designed to give prospective teachers background knowledge and experiences that will help them to teach inquiry-based science effectively. Topics covered include scientific models, meteorology, convection, astronomy, the particulate nature of matter, energy, and change.

113 **Scientific Analysis for Elementary School Teachers** (4). * F and S. This course integrates life, earth and physical science as well as the scientific process skills needed to engage in scientific inquiry. Topics covered include scientific problem solving, testing hypotheses, and designing and carrying-out experiments. Science and scientific processes are analyzed and discussed in terms of their limits and their relevancy to a Christian perspective of the world. Prerequisites: Science Education Studies 112 or Physics 112.

214 **Communication and Learning in the Natural Sciences** (3). *I. This course provides a systematic examination of communication and teaching strategies for natural science at the middle and high school level, including oral exposition, visual imagery, demonstrations, technology, and laboratory activities. Theoretical components include the underlying educational theories, scientific literacy, and the unifying themes and practices in science. Practical components include methodologies for assessment, lesson and unit development, laboratory safety, and student presentations and response. Prerequisite: At least three courses in natural science.

313 **Teaching Science in the Elementary School** (2). * F and S. A consideration of the methods, pedagogies, and strategies associated with teaching science in elementary and middle school. Curricular resources for teaching science, including the use of technology and written materials, are also examined with consideration of the criteria for their evaluation. Additional topics include assessment, benchmarks and standards, and lesson and unit development. The relationship of Christian faith to the teaching of science in the classroom is also examined. Field experiences during normal course hours are included. Prerequisites: Education 302 and at least one natural science course.

314 **Integration Methods and Pedagogies for Secondary Science Teachers** (2). * F, alternate years. This course explores the integration of the natural science disciplines, issues related to the nature of science, and the methods and pedagogies used in secondary science teaching. Theoretical components include a study of the cross-disciplinary nature of science and relevant educational theories impacting the role of the teacher and students in diverse science classroom settings. Practical components include methodologies for lesson and teacher development and assessment, curriculum planning, laboratory development, and classroom management. Prerequisite: Science Education Studies 214.

359 **Seminar in Secondary Teaching of Integrated Science** (3). S. A course in perspectives on, principles of, and practice in the teaching of the natural sciences at the middle school and secondary level. Included are classroom management strategies, the role of the teacher, curriculum studies, readings in science education, and self-assessment strategies. This class is taken concurrently with EDUC 346, allowing students the opportunity to reflect on science education while engaging in classroom practice.

390/590 **Independent Study** (1-4). * F, I, S, and SS. This course provides the opportunity for a student to conduct research or independent work under the direction of a Science Education Studies advisor. Permission to enroll must be obtained from the faculty member directing the project. The requirements for credit are determined by the supervising faculty member in collaboration with the student.

Sociology and Social Work

*Professors **C. Kreykes Brandsen (chair), F. De Jong, P. DeJong (Social Work Practicum Coordinator), P. Freston, B. Hugen (Director of Social Work), M. Loyd-Paige, B. Omolade*
Associate Professors T. VandenBerg, K. Ver Beek
Assistant Professors S. Bluhm Morley, M. Mulder, L. Schwander, J. Tatum (Pre-law Advisor)

The department offers courses in sociology, 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. Urban, cross-cultural, criminology and/or family studies are some possible groupings within sociology that majors might want to pursue. Social work is the study of theory and practice principles related to generalist, 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 lead to a departmental major in sociology, a minor in sociology, a major in social work leading to a Bachelor of Social Work (B.S.W.) degree, and a minor in social work.