Twin Cities Campus

Biology, Society, and Environment B.A.

College of Liberal Arts

• Program Type: Baccalaureate
• Requirements for this program are current for Fall 2014
• Required credits to graduate with this degree: 120
• Required credits within the major: 68 to 86
• Degree: Bachelor of Arts

Students in Biology, Society, and Environment (BSE) receive comprehensive training in biology combined with an in-depth examination of the relevance of biology to social and environmental problems. Students complete coursework in the biological sciences, social sciences, and the humanities.

Program Delivery

This program is available:
• via classroom (the majority of instruction is face-to-face)

Admission Requirements

For information about University of Minnesota admission requirements, visit the Office of Admissions website.

General Requirements

All students are required to complete general University and college requirements including writing and liberal education courses. For more information about University-wide requirements, see the liberal education requirements. Required courses for the major or minor in which a student receives a D grade (with or without plus or minus) do not count toward the major or minor (including transfer courses).

Program Requirements

Students are required to take 4 semester(s) of any second language.

The major curriculum includes courses in biology, chemistry, physics, and mathematics. Note: A course may only be counted once to satisfy the major requirements. At least one upper-division (3xxx-level or above) course in the major must be writing intensive.

Beginning fall 2012, all incoming CLA freshmen must complete the appropriate First Year Experience course sequence. Specific information about this collegiate requirement can be found at: http://class.umn.edu/degree_requirements/index.html

BSE 3001

BSE 2001 - An Introduction to Biology, Society, and Environment (2.0 cr)

Core Courses

Students must take one course in two of three areas: Ethics, Scientific Thought and Inquiry, and Science in Society. No more than one course from any one area may count.

Take exactly 2 course(s) totaling 6 or more credit(s) including exactly 2 sub-requirements(s) from the following:

Ethics
Take no more than 1 course(s) from the following:
• BTHX 5325 - Biomedical Ethics (3.0 cr)
• ESPM 3011W - Ethics in Natural Resources [WI] (3.0 cr)
• HSCI 3401 - Ethics in Science and Technology [His, CIV] (3.0 cr)
• PHIL 3301 - Environmental Ethics [ENV] (4.0 cr)
• PHIL 3305 - Medical Ethics (4.0 cr)

Scientific Thought and Inquiry
Take no more than 1 course(s) from the following:
• PHIL 1005 - Scientific Reasoning (4.0 cr)
• PHIL 3601W - Scientific Thought [WI] (4.0 cr)
• PHIL 4607 - Philosophy of the Biological Sciences (3.0 cr)

Science in Society
Take no more than 1 course(s) from the following:
• GEOG 3361W - Geography and Public Policy [WI] (3.0 cr)
General Biology
Take a minimum of 7 credits by completing BIOL 1009 and one of the following: (1) one course from the multidisciplinary science sequence, or (2) the 2-course animal biology sequence, or (3) the 2-course plant biology sequence.

BIOL 1009 - General Biology [BIOL] (4.0 cr)

Multidisciplinary Science
• ANTH 1001 - Human Evolution [BIOL] (4.0 cr)
• or BIOL 2022 - General Botany (3.0 cr)
• or PHIL 3051 - Human Physiology (4.0 cr)
• or VBS 2032 - General Microbiology With Laboratory (5.0 cr)

Animal Biology
• BIOL 2005 - Animal Diversity Laboratory (2.0 cr)
• BIOL 3211 - Physiology of Humans and Other Animals (3.0 cr)

Plant Biology
• BIOL 3002 - Plant Biology: Function (2.0 cr)
• BIOL 3005W - Plant Function Laboratory [WI] (2.0 cr)

Additional Science Requirements
Take eight courses for 22-23 credits.

Chemistry I
• CHEM 2301 - Organic Chemistry I (3.0 cr)

Chemistry II
• CHEM 1061 - Chemical Principles I [PHYS] (3.0 cr)
• CHEM 1065 - Chemical Principles I Laboratory [PHYS] (1.0 cr)
• CHEM 1071H - Honors Chemistry I [PHYS] (3.0 cr)
• CHEM 1075H - Honors Chemistry I Laboratory [PHYS] (1.0 cr)

Calculus
• MATH 1271 - Calculus I [MATH] (4.0 cr)
• or MATH 1571H - Honors Calculus I [MATH] (4.0 cr)

Physics
• PHYS 1201W - Introductory Physics for Biology and Pre-medicine I [PHYS, WI] (5.0 cr)
• or PHYS 1401V - Honors Physics I [PHYS, WI] (4.0 cr)

Biology Concentration (Major Courses)
Take two courses from the upper-division biology core list and take two additional upper-level courses in biology, anthropology, geography, chemistry, or other discipline chosen in consultation with an adviser. Courses for the biology concentration should have a biology orientation and should fit with the intended theme. A total of 14 credits must be completed. Note: Many pre-health science programs require Organic Chemistry II and lab.

Upper-Division Biology Concentration
Take 2 or more course(s) from the following:
• GCD 3033 - Principles of Cell Biology (3.0 cr)
• Genetics
  • BIOL 4003 - Genetics (3.0 cr)
  • or GCD 3022 - Genetics (3.0 cr)
• Ecology
  • BIOL 3407 - Ecology (3.0 cr)
  • or BIOL 3408W - Ecology [WI] (3.0 cr)
  • or BIOL 3807 - Ecology (4.0 cr)

Sample Concentration Electives
Take 2 or more course(s) from the following:
• ANAT 3001 - Human Anatomy (3.0 cr)
• ANTH 3310 (Inactive) (3.0 - 6.0 cr)
• BIOL 3409 - Evolution (3.0 cr)
• CHEM 2302 - Organic Chemistry II (3.0 cr)
• EEB 4609W - Ecosystem Ecology [ENV, WI] (3.0 cr)
• GCD 3033 - Principles of Cell Biology (3.0 cr)
• GCD 4143 - Human Genetics (3.0 cr)
• GEOG 3401 - Geography of Environmental Systems and Global Change [ENV] (4.0 cr)
• MICB 3301 - Biology of Microorganisms (5.0 cr)
• PHSL 3051 - Human Physiology (4.0 cr)

• Organic Chemistry
  • CHEM 2311 - Organic Lab (4.0 cr)
or CHEM 2312H - Honors Organic Lab (5.0 cr)

• Ecology
  • BIOL 3407 - Ecology (3.0 cr)
or BIOL 3408W - Ecology [WI] (3.0 cr)
  • GCD 3022 - Genetics (3.0 cr)
or BIOL 4003 - Genetics (3.0 cr)

Theme Requirements
Take five courses from the list below or substitute courses in consultation with a BSE adviser. Courses should serve to put "science into context" and should focus on a theme.

Some examples of thematic concentrations might be ethics, economics, and the politics of health care; the global environment; biology and the U.S. government; communicating biology to the public.

Take 5 or more course(s) totaling 15 or more credit(s) from the following:
• ANTH 3306W - Medical Anthropology [GP, WI] (3.0 cr)
• GEOG 3379 - Environment and Development in the Third World [SOCS, ENV] (3.0 cr)
• GEOG 3381W - Population in an Interacting World [SOCS, GP, WI] (4.0 cr)
• GEOG 3411W - Geography of Health and Health Care [WI] (4.0 cr)
• GEOG 4121W - [Inactive] [WI] (4.0 cr)
• GLOS 3305 - Life for Sale: Global Debates on Environment, Science, and Society (3.0 cr)
• HMED 3040 - Human Health, Disease, and the Environment in History [HIS] (3.0 cr)
• HMED 3075 - Technology and Medicine in Modern America [HIS, TS] (3.0 cr)
• HMED 5002 - Public Health Issues in Historical Perspective (3.0 cr)
• HSCI 3211 - Biology and Culture in the 19th and 20th Centuries [HIS, CIV] (3.0 cr)
• HSCI 3244 - History of Ecology and Environmentalism [HIS, ENV] (3.0 cr)
• HSCI 3331 - Technology and American Culture [HIS, TS] (3.0 cr)
• HSCI 3332 - Science and American Culture [HIS, DSJ] (3.0 cr)
• HSCI 3333V - Honors Course: Issues in American Science and Technology in the Past Century [HIS, CIV, WI] (3.0 cr)
• HSCI 3401 - Ethics in Science and Technology [HIS, CIV] (3.0 cr)
• HSCI 4009 - [Inactive] (3.0 cr)
• JOUR 3745 - Mass Media and Popular Culture [AH, DSJ] (3.0 cr)
• PHIL 3301 - Environmental Ethics [ENV] (4.0 cr)
• PHIL 3302W - Moral Problems of Contemporary Society [CIV, WI] (4.0 cr)
• PHIL 3304 - Law and Morality [WI] (4.0 cr)
• PHIL 3305 - Medical Ethics (4.0 cr)
• PHIL 3601W - Scientific Thought [WI] (4.0 cr)
• PHIL 3602 - Science, Technology, and Society (3.0 cr)
• PHIL 3607 - Philosophy of Psychology (4.0 cr)
• PHIL 4607 - Philosophy of the Biological Sciences (3.0 cr)
• PSY 5137 - Introduction to Behavioral Genetics (3.0 cr)
• PUBH 3004 - Basic Concepts in Personal and Community Health (4.0 cr)
• STAT 3011 - Introduction to Statistical Analysis [MATH] (4.0 cr)
• URBS 3751 - Understanding the Urban Environment [ENV] (3.0 cr)
• WRIT 3152W - Writing on Issues of Science and Technology [WI] (4.0 cr)
• HMED 3001V - Health, Disease, and Healing I [HIS, WI] (4.0 cr)
or HMED 3001W - Health, Disease, and Healing I [HIS, WI] (4.0 cr)
or HMED 5200 - Early History of Medicine to 1700 (3.0 cr)
• HMED 3002W - Health Care in History II [HIS, WI] (3.0 cr)
or HMED 5201 - History of Medicine from 1700 to 1900 (3.0 cr)
• HMED 3055 - Women, Health, and History (3.0 cr)
or HMED 5055 - Women, Health, and History (3.0 cr)
• PSY 3604 - Introduction to Abnormal Psychology (3.0 cr)
• PSY 3061 - Introduction to Biological Psychology (3.0 cr)
• PSY 3135 - Introduction to Individual Differences (3.0 cr)
or PSY 5135 - Psychology of Individual Differences (3.0 cr)

Senior Project
In most cases, students complete the senior project one semester prior to graduating. Students are strongly advised to begin planning their senior project with potential faculty mentors and/or the departmental adviser at least two semesters prior to registering for academic credit. Note that most options require prior approval by the potential faculty mentor and some options may be limited during any specific semester.

**Option 1**
- Register for 3-4 credits of directed research. Honors students should register for the honors section, BSE 3996H.
  - BSE 3996 - Senior Project Directed Research (3.0 - 4.0 cr)
  - or BSE 3996H - Honors: Senior Project Directed Research (3.0 - 4.0 cr)

**Option 2**
- Register for 2 additional credits of BSE 3997/3997H. Note that enrollment in BSE 3997/3997H requires concurrent registration in a "Core Courses" or "Theme Courses" course related to chosen area of specialization. Honors students should register for the honors section, BSE 3997H.
  - BSE 3997 - Senior Project (2.0 cr)
  - or BSE 3997H - Honors: Senior Project (2.0 cr)

**Option 3**
- Register for 3-4 credits in a senior seminar course. Honors students should register for the honors section, GEOG 3985V.
  - GEOG 3985W - Senior Project Seminar [WI] (4.0 cr)
  - or GEOG 3985V - Honors Senior Project Seminar [WI] (4.0 cr)
  - or HMED 4960 - Senior Research Topics in Medical History (3.0 - 4.0 cr)