Students in the Environmental Education and Communication track learn how to teach and communicate environmental issues to diverse audiences using a variety of methods. They gain a solid base of knowledge in the environmental sciences, environmental ethics, and the social context of environmental issues, and they develop a practical set of skills for teaching effectively in informal settings and for communicating clearly in written, oral, and electronic forms. They also develop a firm understanding of the challenges involved in educating and communicating about science- and value-based environmental issues. This concentration is appropriate for students who wish to work at government agencies, nature centers, parks, non-governmental organizations, and similar institutions, as well as for students who wish to gain a broad understanding of the environment, environmental issues, and the choices humans can make to mitigate unwanted impacts of human behavior on the environment.

Note: One course cannot satisfy multiple requirements in the major; however a course can satisfy a major requirement and a liberal education and/or CFANS minor requirement.

A. Integrated ESPM Core (12 credits)

- ESPM 1001 Orientation to ESPM: Freshmen Students (1 cr, F)
  _or_ ESPM 1002 Orientation to ESPM: Transfer Students (1 cr, F)
- ESPM 1011 Issues in the Environment (3 cr, F/S)E
- ESPM 2021 Environmental Sciences – Integrated Problem Solving (3 cr, S)
- ESPM 3000 Seminar on Current Issues in ESPM (1 cr, F/S)
- ESPM 4041W Problem Solving for Environmental Change (4 cr, F)
  _or_ ESPM 4021W Problem Solving: Env Review (4 cr, S)

B. Communications (7 credits)

- Writ 1301 University Writing (4 cr, F/S)
  _or_ Writ 1401 Writing and Academic Inquiry (4 cr, F/S)
- Comm 1101 Introduction to Public Speaking (3 cr, F/S)S
  _or_ AFEE 2421 Communication for Ag, Food & Env. (3 cr, F/S)

C. Mathematical Thinking (4 credits)

- ESPM 3012 Statistical Methods for Env. Scientists & Mgrs. (4 cr, S)M
  _or_ Stat 3011 Introduction to Statistical Analysis (4 cr, F/S)M
  _or_ Soc 3811 Basic Social Statistics (4 cr, F/S)M

D. Physical and Basic Biological Sciences (8 credits)

- Biol 1001 Introduction to Biology (4cr, F/S)P,E
  _or_ Biol 1009 General Biology (4 cr, F/S)P,E
- Chem 1015 Introductory Chemistry: Lecture (3 cr, F/S)
  _and_ Chem 1017 Introductory Chemistry: Laboratory (1 cr, F/S)
  _or_ Chem 1061/1065 Chemical Principles I & lab (4 cr, F/S)P,E

E. Social Sciences (7 credits)

- ESPM 3261 Economics & Natural Resources Mgmt (4 cr, S)E,SS
  _or_ ApEc 1101 Principles of Microeconomics (4 cr, F/S)S
- ESPM 3271 Env. Policy, Law & Human Behavior (3 cr, F/S)E,M
  _or_ ESPM 3241W Natural Resource & Environmental Policy (3 cr, S)E,M

F. Internship and Field Experience (1-4 credits) (take one)

- ESPM 4096 Professional experience internship (1 cr, F/S)
  _Requires approval and supervision of faculty advisor in the track_
  _or_ FNRN 2101,2102,2104 Forest Plants, Forest Ecology and Forest Measurement Techniques (4cr, Summer, Cloquet)

G. EEC Track Core Courses (39 credits) (Must satisfy at least one University Writing Intensive requirement)

**EDUCATION AND COMMUNICATION (12-14 CREDITS)**

**CHOICE THREE:**

- ESPM 2401 Environmental Education/Naturalist (3 cr, F)
- ESPM 2411 Environmental Interpretation (3 cr, S)
- AFEE 3430 Communicating Food, Agriculture and Environmental Science to the Public (3 cr, F/S)
- Comm 3401 Introduction to Communication Theory (3 cr, F/S)
- Comm 3451W Intercultural Communication: Theory & Practice (3 cr, F/S)W
- Engl 3501 Public Discourse: Coming to Terms with the Environment (3 cr, S)W
- Jour 3006 Visual Communication (3 cr, F/S)
- Jour 3775 Administrative Law and Regulation of Strategic Communication (3 cr, S)
- Writ 3102W Public Writing (3 cr, F/S)
- Writ 3152W Writing on Issues of Science and Technology (4 cr, F/S)W
- Writ 3221W Communication Modes and Methods (4 cr, F/S)W
- Writ 3315 Writing on Issues of Land and Environment (3cr, S)AH, DSJ
- Writ 3441 Editing, Critique, and Style (3 cr, F/S) online
- Writ 3701W Rhetorical Theory for Writing Studies (4 cr, S)WI
- Writ 5664 Science Writing for Popular Audiences (3 cr, S)

**CHOICE ONE:**

- Evaluation and Assessment of Education (choose one)
  - Epsy 5243 Principles and Methods of Evaluation (3 cr, F/S)
  - OLPD 5501 Principles and Methods of Evaluation (3cr, F/S)
  - FNRM 5259 Visitor Behavior Analysis (3 cr, F)online

**HUMAN DIMENSIONS (9-11 CREDITS)**

- Environmental Ethics (choose one)
  - ESPM 3011W Ethics in Natural Resources (3 cr, F/S)W
  - Phil 3301 Environmental Ethics (4 cr, S)E

- Social & Historical Context of Environmental Issues (choose two)
  - Second Course
    - ESPM 3202W Environmental Conflict Management, Leadership, and Planning (3 cr, S)W
    - ESPM 3245 Sustainable Land Use Planning and Policy (3 cr, F)E
    - ESPM 3607 Natural Resource Consumption & Sustainability (3 cr, S)GP
    - Anth 3041 Ecological Anthropology (3.0 cr, F)
    - Writ 3315 Writing on Issues of Land & Envrnmnt (3 cr, S)AH, DSJ
    - Geog 3371W Cities, Citizens, and Communities, (4.0 cr)
    - Geog 3376 Political Ecology of North America (3 cr, F)
    - HSci 3244 History of Ecology and Environmentalism (3 cr,F)HP,E
    - CSCL/EEB 3361 Visions of Nature: The Natural World and Political Thought (4 cr, F)
    - Soc 4311 Race, Class, and the Politics of Nature (3.0 cr)

- Similar field course.

Continued on next page
NATURAL SCIENCES (15-19 CREDITS)

___ Ecology (choose one)
  - Biol 3407 Ecology (3 cr, F)
  - EEB 3001 Ecology and Society (3 cr, S)E
  - FNRM 3104 Forest Ecology (4 cr, F)
  - FW 2003: Introduction to Marine Biology (3 cr, S)

___ Physical Environment (choose one)
  - BBE 2201 Renewable Energy and the Environment (3 cr, F/S)TS
  - EEB 3603 Science, Protection, & Management of Aquatic Environments (3 cr, F)
  - EEB 5601 Limnology (3cr, S)
  - ESPM 4061W Water Quality and Natural Resources (3 cr, F)
  - FNRM 3114 Forest Hydrology and Watershed Management (3 cr, F/S)
  - ESci 1001 Earth and Its Environment (4 cr, S)E
  - Phys 1001W Energy and the Environment (4 cr, F/S)
  - Soil 2125 Basic Soil Science (4 cr, F/S)

Organismal Biology (choose three, including at least one plant AND one animal)

___ Plants
  - Biol 2022 General Botany (3 cr, F/S)
  - FNRM 1101Dendrology: Identifying Forest Trees & Shrubs (3 cr, F)
  - PBio 4321 Taxonomy of Minnesota Flora (3 cr, F)
  - PBio 4511 Flowering Plant Diversity (3 cr, S)

___ Animals
  - Biol 2012 General Zoology (4 cr, F/S)
  - EEB 4134 Introduction to Ornithology (4 cr, S)
  - EEB 4129 Mammalogy (4 cr, F)
  - Ent 1005 Insect Biology (3 cr, F)
  - Ent 5361 Aquatic Insects (4 cr, S)
  - FW 4136 Icthyology (4 cr, F)
  - FW 4101 Herpetology (4 cr, S)

___ Plants or Animals (see above lists)

COMPLEX HUMAN AND NATURAL SYSTEMS (3 CREDITS)

___ Complex Human and Natural Systems (choose one)
  - ESPM 3108 Ecology of Managed Systems (3 cr, F)E
  - FNRM 5146 Science and Policy of Global Environmental Change (3 cr, S)
  - FNRM 4501 Urban Forest Management: Managing Greenspaces for People, (3.0 cr)
  - FW 4102 Principles of Conservation Biology (3 cr, S)
  - FW 2001 Intro to Fisheries, Wildlife and Cons. Biology (3 cr, F/S)E
  - ESPM 5071 Restoration and Reclamation Ecology (3 cr, F)E
  - LA 3501 Environmental Design and Its Biological and Physical Context (3.0 cr)F
  - UrbS 3751 Understanding the Urban Environment, ENVT (3.0 cr)

H. Liberal Ed. Themes and WI Requirements (8 credits)

Students are strongly encouraged to take classes that fulfill multiple liberal education and theme requirements.

Completed through required coursework:
  - X F - Freshman Composition Requirement
  - X M - Mathematical Thinking
  - X B - Biological Science
  - X Physical Science
  - X SS - Social Science
  - X E - Environment Theme
  - X CIV - Civic Life and Ethics Theme (3 cr)

Students must complete 4 of the 5 Themes

Can be completed through indicated required course work, (or must be completed by taking other courses):
  - X L - Literature (3 cr) (EngL 3501)
  - X AH - Arts/Humanities (3 cr) (Writ 3315)
  - X HP - Historical Perspective (3 cr) (HSci 3244)
  - X DSJ - Diversity & Social Justice in the United States Theme (3 cr) (Writ 3315)
  - X GP - Global Perspectives Theme (3 cr) (ESPM 2041)
  - X TS - Technology & Society Theme (3 cr) (BBE 2201)

Writing Intensive Courses (WI)
(Required: 4 WI courses, 2 of them 3xxx OR 4xxx, one in your major)
  - X ESPM 4041W or 4021W
  - X (Completed if ESPM 3241W taken instead of ESPM 3271)
  - ___ Additional writing intensive course
  - ___ Additional writing intensive course

I. Free Electives: (34 credits)

Students are encouraged to make choices that strengthen their expertise in an area and/or provide comparative understanding from another culture or discipline. To this end, students should strongly consider using free electives to complete a University minor, study abroad experience, or a student designed content area. Students construct these expertise areas with the help of their advisors, and such areas can be integrated as contract courses.

Possible elective courses, in addition to courses from Section G that were not taken:

- HECUA 3591, 3592, 3593, Interdepartmental studies
- Writ 1152W Writing on Issues of Science and Technology (4 cr)
- ESPM 3101 Conservation of Plant Biodiversity (3 cr)
- ESPM 3251 Natural Resources in Sustainable Int'l Development (3 cr)
- ESPM 3241W Natural Resource and Environmental Policy: History, Creation, and Implementation (3 cr)
- ESPM 3245 Sustainable Land Use Planning and Policy (3 cr)
- ESPM 3604 Environmental Management Systems and Strategy (3 cr)
- ESPM 3601 Our Home, Our Environment (3 cr)
- LA 3501 Environmental Design and Its Biological and Physical Context (3 cr)
- Pol 3872W Global Environmental Cooperation (4 cr)
- Soc 4305 Society and the Environment: A Growing Conflict (3 cr)

Please note:
Students are strongly encouraged to have an international experience before graduation.

Courses completed during an international experience (study, work, volunteer, research) can meet program requirements, liberal education requirements, and/or electives. Discussion with an advisor prior to commencing an international experience is required to plan how courses tie into the ESPM program and Environmental Education and Communication Track

Experiential Learning and Interdisciplinary Requirements

Beginning Fall 2013, all students entering CFANS are required to complete at least one course approved for the Experiential Learning designation (EL) and one course approved for the Interdisciplinary designation (ID). Several of the ESPM Integrated Core courses are approved for these designations, so these requirements should not require completing additional courses.

ESPM EEC Track – last updated May 2015