ENVIRONMENTAL SCIENCES, POLICY AND MANAGEMENT B.S.
Corporate Environmental Management Track
Fall 2016
Course and schedule availability subject to change. Use your APAS report to find your exact requirements.

The Corporate Environmental Management (CEM) track is designed to provide graduates with the fundamental skills to systematically determine the environmental burdens associated with a firm’s products or manufacturing processes and to identify opportunities that generate value from environmental risk reduction, regulatory compliance programs, and other alternatives for improving environmental performance. Student experiences within this emphasis will focus on analytical tools; the business, legal, regulatory, and ethical framework in which industrial firms operate; physical, chemical, and biological mechanisms associated with industrial emissions; techniques used to reduce the environmental impacts of industrial activity; and effective communication. The CEM emphasis prepares students for positions within growing environmental, health, and safety organizations housed within private enterprises, consultancies, and governmental institutions, as well as for graduate study in business, public policy, environmental sciences, and industrial ecology.

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)
   - ESPM 1002 Orientation to ESPM: Transfer Students (1 cr, F)
   - ESPM 1011 Issues in the Environment (3 cr, F/S)
   - 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)
   - ESPM 4021W Problem Solving: Env Review (4 cr, S)

B. Communications (7 credits)
   - WRIT 1301 University Writing (4 cr, F/S)
   - WRIT 1401 Writing and Academic Inquiry (4 cr, F/S)
   - COMM 1101 Introduction to Public Speaking (3 cr, F/S)
   - AFEE 2421 Communication for Ag, Food & Env. (3 cr, F/S)

C. Mathematical Thinking (12 credits)
   - MATH 1271 Calculus I (4 cr, F/S)
   - MATH 1272 Calculus II (4 cr, F/S)
   - STAT 3011 Intro to Statistical Analysis (4 cr, F/S)

D. Physical and Biological Sciences (20 credits)
   - BIOL 1001 Introduction to Biology (4 cr, F/S)
   - BIOL 1009 General Biology (4 cr, F/S)
   - CHEM 1061 Chemical Principles I Lecture (3 cr, F/S)
   - CHEM 1065 Chemical Principles I Lab (1 cr, F/S)
   - CHEM 1062 Chemistry Principles II Lecture (3 cr, F/S)
   - CHEM 1066 Chemistry Principles II Lab (1 cr, F/S)
   - PHYS 1301W Intro Physics for Sci. & Engineering I (4 cr, F/S)
   - PHYS 1302W Intro Physics for Science & Engineering II (4 cr, F/S)

E. Social Sciences (7 credits)
   - APEC 1101 Principles of Microeconomics (4 cr, F/S)
   - ECON 1101 Principles of Microeconomics (4 cr, F/S)
   - ESPM 3261 Economics & Natural Resources Mgmt. (4 cr, S)
   - ESPM 3271 Env. Policy, Law & Human Behavior (3 cr, F/S)
   - ESPM 3241W Nat. Resc. & Environ. Policy (3 cr, S)

F. Internship and Field Experience (1-4 credits) choose one
   - ESPM 4096 Professional Experience Internship (1 cr, F)
   - ESPM 3111 Hydrology and Water Quality Field Methods (3 cr, S)
   - FNRM 2101, 2102, 2104 Forest Plants, Forest Ecology and Forest Measurement Techniques (4 cr, Summer, Cloquet)
   - Appropriate study abroad

G. CEM Track: Core and Contract Courses (34-36 Credits)

Core Courses (22 Credits)
   - ACCT 2050 Introduction to Financial Reporting (4 cr, F/S)
   - CECE 3501 Environmental Engineering (3 cr, F/S)
   - ESPM 3602 Regulations and CEM (3 cr, S)
   - ESPM 3603 Environmental Life Cycle Analysis (3 cr, F)
   - ESPM 3604 Environmental Management Systems and Strategy (3 cr, F)
   - MGMT 3001 Fundamentals of Management (3 cr, F/S)
   - SSM 4407W Sustainable Manufacturing Prin. and Pract. (3 cr, F)

Contract Courses (Complete Minimum of 12 Credits)
   - APEC 3931 World Development Problems (3 cr, F)
   - APEC 3511W Environmental and Natural Resource Economics (3 cr, S)
   - BBE 2201 Renewable Energy & the Environment (3 cr, F/S)
   - BBE 3033 Material & Energy Balance in Biological Syst. (3 cr, S)
   - BBE 4535 Assessment and Diagnosis of Impaired Waters (3 cr, F)
   - BBE 4608 Environmental & Industrial Microbiology (3 cr)
   - BBE 4744 Engr. Prin. for Biol. Scientists (4 cr, F)
   - ENGL 3501 Public Discourse: Coming to Terms with the Environment (3 cr, S)
   - ENTR 5121 Applied Experimental Design (4 cr, F)
   - ESPM 3202W Environmental Conflict Management, Leadership, and Planning (3 cr, S)
   - ESPM 3605 Recycling: Extending Raw Materials (3 cr, S)
   - ESPM 3607 Natural Resources Consumption and Sustainability (3 cr, S)
   - ESPM 3656 Composting & Organics Utilization (3 cr, S)
   - ESPM 4216 Contaminant Hydrology (3 cr, F)
   - ESPM 4601 Soils and Pollution (3 cr, F)
   - ESPM 4607 Industrial Biotechnology and the Environment (3 cr, S)

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Grand Challenge Courses approved for CEM track contracts
Optional: Requires approval by petition for inclusion on your contract.

HSCI 3244 History of Ecology & the Environment (3 cr, F) 
SSM 4504W Sustainable Products Systems Mgmt. (3 cr, S) 
WRIT 3315 Writing on Issues of Land & Environ. (3 cr, S) 

__ GCC 3009 Rivers and Cities: Meeting Future Demands on Urban Water Systems (3 cr, S) 
__ GCC 5005 Global Venture Design: What Impact Will You Make? (3 cr, F) 

H. Liberal Education: Diversified Core, Designated Themes and Writing Intensive Requirements
Students must complete four of the five Themes.

Completed through required coursework:
X F – Freshman Composition Requirement 
X M – Mathematical Thinking 
X B – Biological Science 
X P – Physical Science 
X SS – Social Sciences 
X E – Environment Theme 
X CIV – Civic Life and Ethics Theme 

Can be completed through taking indicated courses or contract coursework:
X GP – Global Perspectives Theme (ESPM 3607 or APEC 1101) 
X TS – Technology & Society Theme (BBE 2201 or ESPM 3605) 
X LIT – Literature (ENGL 3501) 
X AH – Arts/Humanities (WRIT 3315) 
X HP – Historical Perspective (HSCI 3244) 
X DSJ – Diversity & Social Justice in the U.S. Theme (3 cr) (WRIT 3315) 

I. Writing Intensive Courses (WI)
(Required: 4 WI courses, 2 of them 3xx OR 4xxx, one in your major)
X PHYS 1301W 
X PHYS 1302W 
X SSM 4407W 
X ESPM 4041W or 4021W 

I. Free Electives (21 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 can be completed through taking indicated courses or contract coursework.

Courses suggested as worthwhile free electives:
CFAN 1501 Biotechnology, People, and the Environment (3 cr, S) 
EE 1701W Energy, Environment and Society (3 cr, F) 
EEB 3407 Ecology (3 cr, F/S) 
ESPM 3011W Ethics in Natural Resources (3 cr, F/S) 
ESPM 3108 Ecology of Managed Systems (3 cr, F) 
ESPM 4061W Water Quality and Natural Resources (3 cr, F) 
ESPM 4242 Methods for Environmental and Natural Resource and Policy Analysis (3 cr, even Falls) 
ESPM 5019 Business, Natural Env, and Global Econ. (2 cr, S) 
FNRM 3104 Forest Ecology (4 cr, F) 
PUBH 6161 Regulatory Toxicology (2 cr, S) 
SCO 3001 Operations Management (3 cr, F/S) 

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 (ESPM 4012W & 4041W) are approved for these designations, so these requirements do not require completing additional courses.

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 ESPM program and the CEM track.