

INTERDISCIPLINARY GRADUATE PROGRAM IN ENVIRONMENT AND RESOURCES (IPER)

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Courses given in IPER have the subject code IPER. For a complete list of subject codes, see Appendix.

Over the last 30 years, environmental and resource investigations have focused on problems with acute local impacts, such as urban air pollution, pesticide use, or groundwater depletion. These problems have been addressed principally at the national and local level through research and policies that address specific media such as air or water; threats such as toxic chemicals; or resources such as forests or wetlands. More global challenges such as climate change and biodiversity loss pose fundamental threats to the health of the planet and human societies. Solutions to these problems must be multifaceted, addressing the interactions among threats and resources, and engaging diverse actors, including academia, national governments, international institutions, business, and civil society. The research and understanding necessary to devise such solutions thus must be both multidisciplinary and interdisciplinary, integrating the analytical tools of diverse fields to yield new insights and promising responses.

The Interdisciplinary Graduate Program in Environment and Resources (IPER) responds to these challenges by leveraging Stanford's faculty strengths in disciplines ranging from ecology and engineering to law and economics, all of which are increasingly directed toward interdisciplinary research and problem solving, and teaching that encompasses collaborative and synthetic courses that cross departmental boundaries.

Interdisciplinary work requires that individuals and groups become familiar with the concepts, methods, data, and analyses of several disciplines in order to focus research questions more sharply. It requires the integration of multidisciplinary knowledge in the formulation of research questions and hypotheses, and in the execution and analyses of results. Students in the IPER program learn through interactions with a cohort of students and a dedicated faculty who influence each other's ways of thinking and questioning.

FOUNDATION AND FLEXIBILITY

IPER students construct an integrative graduate curriculum through shared foundational study and flexibility in a research course. Students in the program are expected to make significant progress in each of three intellectual areas:

1. The linkages between physical and biological systems, and understanding the potential environmental consequences associated with the dynamics or evolution of these joint systems.
2. The interplay between human activities and the Earth system, and how human influence on the environment, such as through methods of production or patterns of consumption, is affected by social and economic institutions, legal rules, and cultural values, and how resources and environment in turn affect human actions and decision making.
3. Skills for gauging the potential impacts of alternative public policy options for dealing with environmental problems, for evaluating such policy alternatives according to various normative criteria, and for integrating scientific research into policy formulation.

The program is flexible to enable students to focus on their areas of greatest interest. For example, a student with a strong interest in the relationship between commercial fishing and coral reef habitat might concentrate on biology, international relations, and economics; a student aiming to understand the environmental impacts from agricultural production decisions might focus on the interplay among economics, biogeochemistry, and hydrology; and a student interested in the design and evaluation of policies to curb emissions of greenhouse gases might learn about scientific, technological, and economic issues, as well as gain skills in policy analysis, evaluation, and implementation.

RESEARCH HIGHLIGHTS

Research is the cornerstone of IPER. Faculty and graduate students are engaged in interdisciplinary research projects such as studying the effects and constraints of agricultural intensification and urbanization in the Yaqui Valley of Sonora, Mexico, and spatial analysis of land use changes in Vietnam. Students in IPER have the opportunity to work on existing projects or develop their own research directions and topics.

Research projects by students in the program address issues such as the science and policy of global climate change, environmental quality, regional security, the mapping and valuation of ecosystem services, energy development, agricultural intensification and variability, characterization

and effects of land use change, conservation finance, and natural resource management. Examples of research projects include:

1. Investigating ecosystem services in the Hawaiian countryside, through study of the sustainable management of native hardwood on private lands by creating financial incentives to make biodiversity conservation economically attractive to landowners.
2. Evaluating electric power sector development in China and India, and the potential for international policy mechanisms to steer these countries toward less CO₂-intensive growth paths.

For additional student research projects, see <http://iper.stanford.edu/research>. For more information about integrative environmental research at Stanford, see the Woods Institute for the Environment web site at <http://environment.stanford.edu>.

GRADUATE PROGRAMS

The University's basic requirements for the M.S. and Ph.D. degrees are discussed in the "Graduate Degrees" section of this bulletin.

DUAL DEGREE MASTER OF SCIENCE

The Interdisciplinary Program in Environment and Resources offers a dual program of study leading to the Master of Science degree. It provides training in interdisciplinary environmental problem solving. Only students enrolled in a professional school (Law, Business, or Medicine) at the University are eligible for the dual M.S. program. IPER gives these graduate students the benefit of a rigorous interdisciplinary course of study, which complements their main degree program. Students interested in the dual M.S. program apply no later than the first year of their primary graduate program. To be admitted, a student needs the approval of both IPER and the principal school and/or department. Applicants to the dual M.S. program are required to submit a statement of purpose as part of the admissions process, clearly explaining the importance of interdisciplinary studies to the student's research or career. Admission to the dual M.S. program depends both on the applicant's ability to successfully complete a demanding program in interdisciplinary studies and the applicant's justification for pursuing the dual M.S. program.

Students in the dual Master of Science program participate in a 45-unit program, to be completed over a period of three or more quarters. All students in the dual M.S. program take three core courses: IPER 310, Environmental Forum Seminar; IPER 320, Research Design and Techniques for Data Collection and Analysis; and either IPER 330, Research Approaches for Environmental Problem Solving, or one M.S.-level core course specific to the dual M.S. degree programs. Students also complete at least eight other graded courses at the 100 level or higher, of which at least two must be at the 200 level while maintaining a 'B' average. Dual M.S. students need at least 45 IPER units for graduation. Directed research and independent study may count for a maximum of eight of these units. Students design their elective courses around one or more of the program's focal areas (culture and institutions; economics and policy analysis; engineering and technology; and natural sciences) chosen to complement but not duplicate their primary research or professional degree program at Stanford. These focal areas are not declared on Axess; they do not appear on the transcript or diploma.

The student's program of study is subject to the approval of the student's advising team, consisting of at least one faculty member from the applicable professional school and one faculty member from the student's chosen focal area within IPER. The dual degree is conferred when the requirements for both IPER and the professional degree program have been met.

MASTER OF SCIENCE

In exceptional circumstances, the Interdisciplinary Graduate Program in Environment and Resources offers a Master of Science degree for students who have been admitted to the IPER Ph.D. program but who opt to complete their training with a M.S. degree and not pursue the Ph.D. degree. Admission directly to the stand-alone M.S. program is not allowed.

M.S. course work should total at least 45 units at or above the 100-level, of which 18 units should be at or above the 200-level. All students take the IPER core curriculum for dual degree M.S. students, comprising:

IPER 310, Environmental Forum Seminar; IPER 320, Research Design and Techniques for Data Collection and Analysis; and either IPER 330, Research Approaches for Environmental Problem Solving, or one M.S.-level core course specific to the dual master of science degree programs (Law, Business, or Medicine).

In addition, students plan a sequence of courses with a focus in a particular area of study. Possible focal areas include culture and institutions; economics and policy analysis; engineering and technology; and natural sciences. These focal areas are not declared on Axess; they do not appear on the transcript or diploma.

A program proposal, signed by the student's program adviser and approved by the chair of the student's M.S. committee, must be filed within the first four weeks of the first quarter of enrollment. Students may take no more than 6 units credit/no credit and must maintain at least a 'B' average in all courses taken for the M.S. degree. The M.S. program does not have an M.S. with thesis option. Students may write a master's thesis, but it is not formally recognized by the University.

DOCTOR OF PHILOSOPHY

1. The student works with a faculty advising team to design a course of study that allows the student to develop and exhibit: a) familiarity with analytical tools and research approaches for interdisciplinary problem solving, and a mastery of those tools and approaches central to the student's thesis work; b) interdisciplinary breadth in each of four focal areas: culture and institutions; economics and policy analysis; engineering and technology; and natural sciences; and c) depth in at least two distinct fields of inquiry. The advising team has primary responsibility for ensuring the adequacy of the course of study. The IPER faculty advising team is comprised minimally of two lead advisers, each representing a field of inquiry chosen by the student. At a minimum, the student meets with these advisers quarterly during the first year and annually thereafter. Depth in the fields of inquiry is monitored by a student's two lead faculty advisers who must certify that a) the two fields of inquiry are sufficiently distinct such that work integrating the two is interdisciplinary; and b) the student's course work and independent study has provided the substantial depth of understanding normally expected at the Ph.D. level.

Breadth requirements vary by concentration area and are normally satisfied through a sequence of courses, independent study, and/or demonstration of proficiency through prior course work and/or experience. Breadth fulfillment is certified by a student's two lead faculty advisers, and the IPER faculty director. See below for a list of courses that satisfy each of the breadth areas. Additional information about breadth requirements, including any updates to the list of courses that satisfy the requirements, can be found at <http://iper/study/requirements.html> or obtained from the IPER office.

The three core courses to be taken by all Ph.D. students are IPER 310, Environmental Forum Seminar, IPER 320, Research Design and Techniques for Data Collection and Analysis, and IPER 330, Research Approaches for Environmental Problem Solving. All core courses must earn a letter grade of 'B' or higher. Normally, IPER Ph.D. students are expected to take all courses, apart from undergraduate prerequisites, for a letter grade unless their advisers recommend otherwise.

2. To be admitted to candidacy for the Ph.D. degree, a student must have successfully completed at least 25 graded units (not including research credits) of graduate courses (200 level and above) maintaining a 'B' average. In addition, the student must pass an oral qualifying exam that demonstrates command of two areas of specialization as well as interdisciplinary breadth. The student may not have any incompletes on the transcript.
3. By the end of the sixth quarter of study, students present a Ph.D. candidacy plan to their primary advisers, with a copy to the associate and assistant directors. This plan should include:
 - a) the names of 4-5 proposed oral qualifying exam committee members.
 - b) a list of courses or experiences used to fulfill the IPER breadth and depth requirements.
 - c) courses TA'd or which the student intends to TA to fulfill the teaching requirement.

- d) an unofficial transcript to ensure completion of the IPER core curriculum.
- e) a proposed date for the oral qualifying exam. The plan is reviewed and subject to approval by the IPER faculty director.

By the end of the quarter prior to the quarter during which the oral qualifying exam is to be taken, a student must formally designate a committee and the primary advisers must certify that the student is eligible to take the exam. The oral qualifying exam committee of 4-5 members should include the student's two lead faculty advisers and other faculty with expertise in at least two of the student's fields of inquiry; it may also include a member-at-large. The majority of the oral qualifying exam committee should be members of the Academic Council. The chair of the committee must be a member of the Academic Council and should not be one of the student's lead advisers. Normally, membership of the oral qualifying exam committee should not change after formal designation. Thereafter, the IPER Executive Committee must approve any proposed changes.

The oral qualifying exam consists of two parts: a 20-40 minute presentation of a dissertation proposal and a question and answer period during which the student should be prepared to address questions about the dissertation proposal and broader questions arising from IPER breadth and depth course work. The total procedure should span two to two-and-a-half hours. A written dissertation proposal should be distributed to a student's oral qualifying exam committee 10 days before the actual examination. The proposal should be 15-30 pages in length, double-spaced, excluding appendices and references. It should include a title page, an abstract, an introduction outlining and motivating the research questions, a background literature review establishing the intellectual context of the proposed work, a description of the methodology or approaches to be taken in the work, a discussion of results and other progress made to date, a timeline for future research, and a references section. The proposal should discuss explicitly the interdisciplinary nature of the research and why it is appropriate for a degree in environment and resources. The oral qualifying exam should be successfully completed by the end of the eighth quarter. To complete the Ph.D., the student must pass a University oral examination in defense of the dissertation.

- 4. Teaching experience is an essential element of training in the Ph.D. program. Each student is required to complete one quarter of teaching, which can be fulfilled by serving as a teaching assistant for IPER 320 or IPER 330 or by serving as a TA for any other course, in any department or program, with a discussion section or with an opportunity to lecture in at least two class sessions.

The IPER Ph.D. program is complementary to the disciplinary environmental science, engineering, and policy analysis taught in Stanford departments and schools. Students in IPER develop depth in multiple disciplinary fields and integrate the knowledge across those fields. The goal of the interdisciplinary Ph.D. program is for students to achieve an integrated understanding of environmental processes or problems, and the tools they need to address these challenge in the real world.

Additional information may be found in the *Graduate Student Handbook* at <http://www.stanford.edu/dept/DoR/GSH/>.

The following courses may be taken to satisfy the breadth area requirements:

CULTURE AND INSTITUTIONS BREADTH COURSES

- IPER 235. Global Environmental Ethics
- IPER 265. Central America: Environment, Development and Security
- ANTHSCI 153. The Population Question
- ANTHSCI 162. Indigenous Peoples and Environmental Problems
- ANTHSCI 164. Ecological Anthropology
- ANTHSCI 252. Political Ecology
- ECON 228. Institutions and Organizations in Historical Perspective
- HIST 281A. Environmental History of the Americas
- LAW 280. Toxic Harms
- LAW 281. Natural Resources Law and Policy
- LAW 437. Water Law and Policy
- LAW 592. International Conflict

- LAW 594. International Institutions
- LAW 603. Environmental Law and Policy
- LAW 604. Environmental Workshop
- LAW 605. International Environmental Law and Policy
- LAW 667. Marine Resources
- POLISCI 351A. Foundations of Political Economy
- POLISCI 362. New Economics of Organizations
- POLISCI 424. Introduction to Political Psychology
- POLISCI 435. Topics in the Philosophy of Social Science
- POLISCI 436. Rational Choice
- PUBLPOL 102. Organizations and Public Policy
- PUBLPOL 166. Organizational Theory and Design
- PUBLPOL 194. Technology Policy
- SOC 116. Globalization and Organizations
- SOC 260. Formal Organizations
- SOC 264. Firms, Markets, and States
- SOC 360. Foundations of Organizational Sociology
- SOC 362. Organization and Environment
- SOC 364. Organizations as Governance Structures
- SOC 367. Institutional Analysis of Organizations
- SOC 377. Comparing Institutional Forms: Public, Private, and Non-profit
- STS 110. Ethics and Public Policy

ECONOMICS AND POLICY ANALYSIS BREADTH COURSES

Students taking IPER 243 are expected to have mastered the topics covered in any of the following course combinations or by equivalent courses previously taken elsewhere. Prior enrollment in one of these course combinations is encouraged.

- ECON 50 and 51
- ECON 50 and 155
- ECON 150
- ECON 206
- ECON 202N and 203N
- MS&E 241

Alternatively, students may satisfy the minimum breadth requirement by taking courses culminating in ECON 241 or 243.

ENGINEERING AND TECHNOLOGY BREADTH COURSES

- CEE 101B. Mechanics of Fluids
- CEE 166B. Floods and Droughts, Dams and Aqueducts
- CEE 172. Air Quality Management
- CEE 176A. Energy Efficient Buildings
- CEE 176B. Electric Power: Renewables and Efficiency
- CEE 177. Aquatic Chemistry and Biology
- CEE 270. Movement and Fate of Organic Contaminants in Surface Waters and Groundwater
- CEE 274E. Pathogens in the Environment
- GES 230. Physical Hydrogeology
- MS&E 250A. Engineering Risk Analysis

NATURAL SCIENCES BREADTH COURSES

- IPER 250. Ecological Principles for Environmental Problem Solving
- BIOSCI 101. Ecology
- BIOSCI 121. Biogeography
- BIOSCI 136. Evolutionary Paleobiology
- BIOSCI 139. Biology of Birds
- BIOSCI 143. Evolution
- BIOSCI 144. Conservation Biology
- BIOSCI 280. Fundamentals of Sustainable Agriculture
- BIOHOPK 263H. Oceanic Biology
- BIOHOPK 265H. Air and Water
- BIOHOPK 266H. Molecular Ecology
- BIOHOPK 272H. Marine Ecology
- CEE 164. Introduction to Physical Oceanography
- CEE 274A,B. Environmental Microbiology I, II

ENERGY 260. Groundwater Pollution and Oil Slicks
 GEOPHYS 104. The Water Course
 GEOPHYS 130. Biological Oceanography
 GES 140. Remote Sensing of Land Use and Land Cover
 GES 170. Environmental Geochemistry
 GES 175. Science of Soils
 GES 205. Advanced Oceanography
 GES 230. Physical Hydrogeology
 GES 240. Geostatistics for Spatial Phenomena
 GES 259. Marine Chemistry
 GES 268. Geomicrobiology

COURSES

Additional courses may be listed in the quarterly *Time Schedule*.

IPER 210. Communication and Leadership Skills—(Same as BIOSCI 388.) Focus is on delivering information to policy makers and the lay public. How to speak to the media, Congress, and the general public; how to write op-eds and articles; how to package ideas including titles, abstracts, and CVs; how to survive peer review, the promotion process, and give a job talk; and how to be a responsible science advocate.

2 units, not given this year

IPER 220. Special Topics Seminar—See *Time Schedule* for information on courses offered each quarter. May be repeated for credit.

1-5 units, Aut, Win, Spr, Sum (Staff)

IPER 220A. Special Topics Seminar—See *Time Schedule* for information on courses offered each quarter. May be repeated for credit.

1-5 units, Aut, Win, Spr, Sum (Staff)

IPER 230. Environment and Resources Field Research—Contemporary environment and resource challenges at sites around the world. Courses are offered on a variable schedule depending on the interests of IPER students and faculty. See *Time Schedule* for current offerings.

1-9 units, Aut, Win, Spr, Sum (Staff)

IPER 235. Global Environmental Ethics—Theories of environmental ethics and their evolution. Environmental treaties as a framework to analyze case studies of contemporary ethical issues raised by environmental problems that transcend national boundaries.

4-5 units, Win (Hoagland, S)

IPER 243. Energy and Environmental Policy Analysis—(Same as MS&E 243.) Concepts, methods, and applications. Energy/environmental policy issues such as automobile fuel economy regulation, global climate change, research and development policy, and environmental benefit assessment. Group project. Prerequisite: 241 or ECON 50, 51.

3 units, not given this year

IPER 250. Ecological Principles for Environmental Problem Solving—For students in Law, Business, or Medicine, or IPER students with limited biology background. Topics include field methods, climate, biogeography, biogeochemical cycles, physiology, population genetics, and environmental ethics.

3 units, Win (Root, T)

IPER 260. The Social Sciences and Environmental Problem Solving—For students with little background in the social sciences interested in incorporating them into their research. Focus is on the contribution that the social sciences of international relations, political science, anthropology, and sociology make to environmental problem solving. Case studies from international regime building, inter-agency politics, organizational behavior, and cultural dynamics.

2-3 units, not given this year

IPER 265. Central America: Environment, Sustainable Development, and Security—(Same as ANTHSCI 165B/265B.) Interrelationships among environmental stress, poverty, and security in Central America, with focus on Costa Rica. The legacy of the Cold War in Central America as manifested in the Contra war and U.S. policy. Current development schemes and their impact on environment and security in the region. Dilemmas between population growth in the developing world and consumption patterns in the industrial world. Possible optional field trip to Costa Rica over Spring Break at extra expense; limited capacity.

3-5 units, not given this year

IPER 270. Graduate Practicum in Environment and Resources—Opportunity for IPER students to pursue areas of specialization in an institutional setting such as a laboratory, clinic, research institute, governmental agency, non-governmental organization, or multilateral organization. Meets USCIS requirements for off-campus employment with endorsement from designated school official.

1-9 units, Aut, Win, Spr, Sum (Staff)

IPER 286. Interpersonal Influence and Leadership—(Same as MS&E 286.) How one's actions affect influence upon others and the ability to work with them. Foundational skills such as the ability to work through difficult issues, give and receive feedback, and work in groups. How to work with different people. The art of learning from experience.

3 units, Win (Robin, C)

IPER 300. Earth Sciences Seminar—(Same as EARTHSYS 300, GES 300, GEOPHYS 300, ENERGY 300.) Required for incoming graduate students except coterms. Research questions, tools, and approaches of faculty members from all departments in the School of Earth Sciences. Goals are: to inform new graduate students about the school's range of scientific interests and expertise; and introduce them to each other across departments and research groups. Two faculty members present work at each meeting. May be repeated for credit.

1 unit, Aut (Matson, P; Graham, S)

IPER 310. Environmental Forum Seminar—Required IPER core course. Participants attend the Woods Institute's forum series or other environmental seminar. Issues such as the conceptual framework of the topic, analytical approaches, validity of conclusions from an interdisciplinary perspective, and alternative approaches. May be repeated for credit.

1-2 units, Aut, Win (Staff)

IPER 320. Research Design and Techniques for Data Collection and Analysis—Required IPER core course. Alternative designs for environmental research projects. Primary data collection techniques versus mixed method approaches. Interpretation of data, including basic statistical methods. Analysis of environmental literature, and development of individual research design, data collection, and analysis strategies.

3 units, Win (Davis, J)

IPER 330. Research Approaches for Environmental Problem Solving—Required IPER core course. Analytical tools, models, and approaches central to interdisciplinary research on the world's leading environmental issues. Topics include: observing systems and data sources; computation and modeling approaches to complex problems; translation and integration of alternative disciplinary approaches to research, analysis, and uncertainty; policy analysis; cost benefit analysis, risk benefit analysis, qualitative methods, and other decision analytic frameworks and valuation approaches; team building and leadership roles; review and proposal writing; speaking.

3 units, Spr (Matson, P; Daily, G)

IPER 333. Water Policy Colloquium—(Same as CEE 333, GES 333.) Student-organized interdisciplinary colloquium. Creation, implementation, and analysis of policy affecting the use and management of water resources. Weekly speakers from academia and local, state, national, and international agencies and organizations. Previous topics include water policy in California and developing countries.

1 unit, Spr (Freyberg, D)

IPER 398. Directed Individual Study in Environment and Resources—Under supervision of an IPER faculty member on a subject of mutual interest.

1-9 units, Aut, Win, Spr, Sum (Staff)

IPER 399. Directed Research in Environment and Resources—For advanced graduate students.

1-9 units, Aut, Win, Spr, Sum (Staff)

IPER 410. Ph.D. Qualifying Tutorial—For Ph.D. students only.

1 unit, Aut, Win, Spr, Sum (Staff)

IPER 460. Proposal Writing Tutorial—Practical training in grant writing methods. Students draft research proposals relevant to individual interests with supervision from IPER faculty.

1-2 units, Aut, Win, Spr (Staff)

IPER 480. Dissertation Writing Tutorial in Environment and Resources—For students who have completed the oral qualifying examination.

1-15 units, Aut, Win, Spr, Sum (Staff)

COGNATE COURSES

See respective department listings for course descriptions and General Education Requirements (GER) information. See degree requirements above or the program's student services office for applicability of these courses to a major or minor program.

ANTHSCI 162/262. Indigenous Peoples and Environmental Problems

3-5 units, Aut (Durham, W)

BIOHOPK 163H/263H. Oceanic Biology

4 units, Win (Denny, M; Somero, G)

BIOSCI 101. Ecology

3 units, Aut (Vitousek, P; Dirzo, R)

BIOSCI 139. Biology of Birds

3 units, Spr (Root, T)

BIOSCI 143/243. Evolution

3 units, Aut (Watt, W)

CEE 101B. Mechanics of Fluids

4 units, Spr (Koseff, J)

CEE 164/262D. Introduction to Physical Oceanography—(Same as EARTHSYS 164.)

4 units, Win (Hench, J)

CEE 166B/266B. Floods and Droughts, Dams and Aqueducts

3 units, Win (Freyberg, D)

CEE 172. Air Quality Management

3 units, Win (Hildemann, L)

CEE 176A. Energy Efficient Buildings

3-4 units, Win (Masters, G)

CEE 176B. Electric Power: Renewables and Efficiency

3-4 units, Spr (Masters, G)

CEE 177. Aquatic Chemistry and Biology

4 units, Aut (Criddle, C)

CEE 270. Movement and Fate of Organic Contaminants in Waters

3 units, Aut (Luthy, R), Sum (Robertson, A)

CEE 274A,B. Environmental Microbiology

3 units, A: Aut, Sum (Staff), B: Spr (Spormann, A)

EARTHSYS 130/230. Biological Oceanography—(Same as GEOPHYS 130/231.)

2-4 units, Spr (Arrigo, K)

EARTHSYS 180/280. Fundamentals of Sustainable Agriculture—(Same as BIOSCI 180/280.)

3 units, Spr (Naylor, R; Daily, G), alternate years, not given next year

ECON 50,51. Economic Analysis

5 units, 51: Aut (Abramitzky, R), Spr (Tendall, M), 52: Win, Sum (Staff)

ECON 155. Environmental Economics and Policy—(Same as EARTHSYS 112.)

5 units, Spr (Staff)

ECON 228. Institutions and Organizations in Historical Perspective

2-5 units, Aut (Greif, A)

ECON 243. Economics of Environment

2-5 units, Spr (Goulder, L)

ENERGY 240. Geostatistics for Spatial Phenomena—(Same as GES 240.)

3-4 units, Win (Journel, A)

GES 170. Environmental Geochemistry

4 units, Win (Brown, G)

GES 175. Science of Soils

4 units, Spr (Fendorf, S)

GES 230. Physical Hydrogeology—(Same as CEE 260A.)

4 units, Aut (Gorelick, S)

HUMBIO 112. Conservation Biology—(Same as BIOSCI 144.)

3-4 units, Win (Boggs, C; Launer, A)

HUMBIO 118. Ecological Anthropology—(Same as ANTHSCI 164/264.)

3-5 units, Win (Bird, R)

MS&E 241. Economic Analysis

3-4 units, Win (Weber, T)

MS&E 250A. Engineering Risk Analysis

2-3 units, Win (Paté-Cornell, E)

OB 672. Organization and Environment—(Same as SOC 362.)

4 units, Win (Staff)

POLECON 680. Foundations of Political Economy—(Same as POLISCI 351A.)

4 units, Aut (Staff)

POLISCI 362. New Economics of Organization—(Same as OB 686.)

5 units, Spr (Weingast, B)

POLISCI 436. Rational Choice

5 units, Spr (Staff)

PUBLPOL 102. Organizations and Public Policy

5 units, Win (Bendor, J)

PUBLPOL 104. Economic Policy Analysis—(Same as ECON 150.)

5 units, Spr (Kessler, D)

PUBLPOL 194. Technology Policy

5 units, Win (Windham, P)

SOC 160/260. Formal Organizations

5 units, Spr (Staff)

SOC 367. Institutional Analysis of Organizations

3-5 units, Aut (Scott, W)

STS 110. Ethics and Public Policy—(Same as MS&E 197, PUBLPOL 103B.)

5 units, Win (McGinn, R)