COLUMBIA UNIVERSITY

Environmental Policy Curriculum Workshop: Final Report
Environmental Policy Curriculum Workshop

Final Report

Hosted by Columbia University’s Earth Institute and the School of International and Public Affairs At Biosphere 2 Center in Oracle, Arizona

December 17th – 19th, 2000

Workshop Co-chairs
Steven Cohen, Columbia University
Sheldon Kamieniecki, University of Southern California

The conference co-chairs gratefully acknowledge the research assistance of Kelly Christensen and Candace Winkler in preparing this report, and of Melissa Pouyemirou and Debra Carter of the Picker Center for Executive Education for organizing the meeting.
Executive Summary

Columbia University’s Earth Institute and the School of International and Public Affairs held an Environmental Policy Curriculum Workshop from December 17th – 19th, 2000 at the University’s Biosphere 2 Center in Oracle, Arizona. The objective of the conference was to bring together academics from across disciplines, to discuss and improve upon elements of Environmental Policy curricula, in both graduate and undergraduate programs. The workshop successfully engaged academics in a two-day intensive effort to share lessons from their respective curricula and to exchange ideas about best practices in environmental policy and management education. The Workshop was co-chaired by Sheldon Kamieniecki, Professor and Chair of the Department of Political Science, University of Southern California and Steven Cohen, Director of Columbia’s new Graduate Program in Earth Systems, Science, Policy and Management.

The conference was a rare opportunity for faculty to meet in formal sessions and in informal discussions and focus on teaching and curriculum development in environmental policy studies. The panel sessions were lively, engaging and set in a beautiful conference location on the Biosphere 2 campus. Feedback from participants about the conference was quite positive, and a great deal was learned about teaching environmental policy.

The conference included time for informal conversation and presentations on the Earth Semester Program offered at the Biosphere 2 and attended by undergraduate students from many universities. Faculty participated in a tour of the Biosphere, were briefed on plans for the development of the campus and engaged in two days of formal panel discussions on the following seven topics: Interdisciplinary Teaching and the Overall Design of Environmental Policy Studies: Concentrations, Degrees, and the Issue of Academic Disciplines; Methods for Teaching Environmental Management and Public Administration Issues; Treatment of Political Institutions, Legal Structures in Environmental Curricula; The Role of Economics and Policy Analysis in Environmental Studies; Methods for Addressing Science and Technology Issues in Environmental Curricula; Ethics, Values, Justice and Perceptions in Environmental Curricula; and Workshop Projects, Internships, Case Studies and Other Applied Elements of Environmental Curricula.

The conference provided spirited discussion of the state of environmental policy studies programs, with panelists in each session sharing ideas of how to build and improve these programs. Although the panel topics covered a spectrum of disciplines, similar themes arose throughout the discussions. These themes addressed how to build a truly interdisciplinary program; what level of preparation to require of students entering these programs; the level of theory versus practice to teach in the courses; how to retain excellent faculty within an interdisciplinary curriculum structure; and the type of experience to provide students in capstone courses.

A discussion of how to build an interdisciplinary program formed the core of many of the panels. The structure of environmental policy studies programs often inhibits integration with separate courses in environmental economics, politics, science and ethics and provides little opportunity to bring together different perspectives. The question of focus became a major theme of the workshop. As many professors and students are trained in a single discipline, the classroom experience often reflects this background.

Panelists agreed that although a truly interdisciplinary approach provides a deeper understanding of environmental policy issues, it is often difficult to achieve. One conclusion about current interdisciplinary course structures is that they are actually multi-disciplinary, not interdisciplinary. The tools of multiple disciplines are addressed separately without an integrated approach. A problem-solving approach with case studies can be used to break down these barriers, although the instructor needs to discuss explicitly the perspectives of different disciplines. Further,
it is often difficult to create an interdisciplinary approach neatly into a semester format. Although cross-disciplinary team teaching can counter this bias, this approach carries with it the challenge of cost and coordination. The workshop discussed the demarcation point between multi-disciplinary and interdisciplinary work. However, the question for panelists remained, at what point is integration meaningful conceptually and practically and at what point is it too superficial to matter?

Panelists also addressed what level of preparation should be required of students before they can enroll in particular classes. Many courses approach environmental studies from the perspective of a single discipline that requires background in that discipline before students can fully apply the tools and concepts taught. With a multidisciplinary program design, many students do not have the required background, thus presenting challenges to professors for teaching these courses.

Professors approached this problem in three ways: list and require pre-requisites, and structure the course as a course in a single-discipline curriculum; list prerequisites, but allow students without proper training but who agree to complete extra work to enroll; or list no prerequisites, and either lighten the technical content, or force students to work in teams to learn, paralleling what often happens in real-world situations. Given the difficulty of this problem, no approach seemed preferable; each had its supporters and detractors.

Another major theme discussed in the conference was how to balance theory and practice in environmental policy courses. Again, given the diverse backgrounds of the program students, this issue proved difficult for many instructors. On the one hand, students who enter the program with deep training in a core discipline may be amenable to a high level of theoretical content, and a certain amount of theory is required to explain the concepts to students. However, students who bring more work experience often find any theory to be too much, and too much abstract content runs the risk of alienating them. The panel discussions revolved around finding the balance, how to introduce an appropriate level of theory without losing the practical element required for performance in the real world.

Related to the issue of multi-disciplinary focus is the nature of tenure and retaining faculty in environmental policy programs. Since most professors do not have degrees specifically in environmental policy studies, and have joined universities in other departments, it can be difficult to build a program with dedicated faculty who teach the same courses over time, develop new and innovative curricula, advise students and take on full-time faculty responsibilities. Professors need to view the environmental policy studies program as a potential home, and it has proven difficult for many departments to make this happen. Issues cited included under-funding for endowed chairs (which tend to be allocated to more established departments), drawing top students, and keeping departments large enough to develop opportunities for collaboration.

Finally, a more practical issue was how to teach the “capstone” courses that form part of most environmental policy curricula. Specifically, the discussion focused on how to design the group project element of these courses. There were two approaches discussed: either create a simulated exercise, with a problem defined by the professors, or work with a real client, typically an agency or NGO, and a real problem. Although there are costs and benefits to each approach which panelists discussed in many of the sections, the majority opinion seemed to be the “real world” approach, if properly managed, offered the best experience for students.

The conference concluded with a summary presented by Professor Charles Wood, the Director of Education at the Biosphere 2 Campus. He moderated a discussion of the key points of the conference. Overall, the conference provided a rare opportunity for practitioners and colleagues to share ideas and insights regarding environmental policy studies courses and programs across the nation.
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Overview:

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The conference was a rare opportunity for faculty to meet in formal sessions and in informal discussions and focus on teaching and curriculum development in environmental policy studies. The panel sessions were lively, engaging and set in a beautiful conference location on the Biosphere 2 campus. Feedback from participants about the conference was quite positive, and a great deal was learned about teaching environmental policy.

Conference participants included:

- Barry Bozeman, Georgia Institute of Technology
- Kristan Cockerill, Biosphere 2, Columbia University
- Steven Cohen, Columbia University
- Debra Colodner, Biosphere 2, Columbia University
- Joseph DiMento, University of California, Irvine
- David Downie, Columbia University
- Bill Eimicke, Columbia University
- A. Myrick Freeman, Bowdoin College
- Lewis Gilbert, Columbia University
- Peter Haas, University of Massachusetts, Amherst
- Helen Ingram, University of California, Irvine
- Sheldon Kamieniecki, University of Southern California
- Michael Kraft, University of Wisconsin, Green Bay
- Daniel Mazmanian, University of Michigan
Carol McAusland, University of California, Santa Barbara
Lettie McSpadden, Northern Illinois University
Bob Paehlke, Trent University
Linwood Pendleton, University of Southern California
Alex Pfaff, Columbia University
Daniel Press, University of California, Santa Cruz
Steve Rayner, Columbia University
Tony Rosenbaum, University of Florida
Denise Scheberle, University of Wisconsin, Green Bay
Jim Simpson, Columbia University
Charles Wood, Biosphere 2, Columbia University

The conference included time for informal conversation and presentations on the Earth Semester Program offered at the Biosphere 2 and attended by undergraduate students from many universities. Faculty participated in a tour of the Biosphere, were briefed on plans for the development of the campus and engaged in two days of formal panel discussions on the following seven topics:

- Interdisciplinary Teaching and the Overall Design of Environmental Policy Studies: Concentrations, Degrees, and the Issue of Academic Disciplines.
- Treatment of Political Institutions, Legal Structures in Environmental Curricula.
- The Role of Economics and Policy Analysis in Environmental Studies.
- Methods for Addressing Science and Technology Issues in Environmental Curricula.
- Ethics, Values, Justice and Perceptions in Environmental Curricula.
- Workshop Projects, Internships, Case Studies and Other Applied Elements of Environmental Curricula.

The conference concluded with a summary presented by Professor Charles Wood, the Director of Education at the Biosphere 2 Campus. He moderated a discussion of the key points of the conference, many of which are summarized below.
The remainder of the report presents brief summaries of some of the points raised at each panel, a list of key issues raised at the session, and summaries of the course syllabi submitted before the conference to provide background for discussion. The complete syllabi were produced in the conference workbook, which is available upon request.

Panel 1: Interdisciplinary Teaching and the Overall Design of Environmental Policy Studies: Concentrations, Degrees, and the Issue of Academic Disciplines

Panelists: Daniel Mazmanian, University of Michigan, Chair
            David Downie, Columbia University
            Helen Ingram, University of California, Irvine
            Michael Kraft, University of Wisconsin, Green Bay

Panel Summary:

This panel was designed to promote discussion and thought about the role and design of interdisciplinary programs in environmental policy. Although this panel dealt specifically with interdisciplinary teaching, the subject was discussed within the framework of other panels as well.

Most students, according to the panelists, want courses that are practical in nature. Many students have prior work experience, feel they have relevant background in the topic, and thus believe they do not need a good deal of analytical preparation. However, and conversely, students want tools to help solve problems. Further, students often have varying backgrounds, creating the need to provide some common framework within which to work.

It is difficult to create this interdisciplinary framework without confusing students. The challenge is to cover topics the students need to know without using too many tools, and so to determine which tools best fit the topic. Some professors stated that they used minimum requirements to separate out students. Others claimed that with students’ different backgrounds, this was difficult to do.

Another issue was the mix of practical versus theoretical emphasis in courses. The focus of most courses was policy-driven, with an emphasis on how to get policy changed or implemented. Some faculty indicated that they needed theory to show how policy is made. The question of how much theory students need to understand the issues without becoming overly theoretical and losing the practical aspects remained at the center of the discussion.

Often, the structure of environmental policy studies programs inhibits integration with separate courses in environmental economics, politics, science and ethics and little opportunity to bring together different perspectives. A problem-solving approach with case studies can be used to break down these barriers, although the instructor needs to discuss explicitly the perspectives of different disciplines. Multi-disciplinary environmental studies are common, interdisciplinary studies are much less common. Students need to be well versed in at least one discipline in order to engage in a cross-disciplinary dialogue. A problem with team-teaching is that often institutions do not reward such labor-intensive activity. It is often difficult to fit an interdisciplinary approach neatly
into a semester format. The panel discussed the demarcation point between multi-disciplinary and interdisciplinary work. At what point is integration meaningful conceptually and practically and at what point is it too superficial to matter?

One issue raised during this panel was the need to bring to environmental policy studies a professional orientation that results in marketable skills. It is not enough to create well-educated Masters students; they must be employable as well.

Key Issues:

1. How do professors successfully integrate students with vastly varied backgrounds?
2. What is the proper amount of theory to teach in these courses?
3. How much disciplinary knowledge is a prerequisite to cross-disciplinary dialogue?

Course Summaries:

Bowdoin College’s Introduction to Environmental Studies (Environmental Studies 101) course is an interdisciplinary introduction to environmental issues. The course is team taught, and addresses each relevant discipline, moving to discuss major environmental problems after surveying all disciplines. Lecture topics include: Overview Addressing Major Problems, Is there an Environmental Crisis?; Science (Scientific Method, Scientific Uncertainty, Ecology and Ecosystem Services, Biodiversity); Social Science (The Tragedy of the Commons; The EPA and Policy Formulation; Cost-Benefit Analysis); Humanities (Ethics; Religion, History and Technology); Population (Human Population: The Problem, First World Consumption, Population, Food and Agriculture, Air Pollution and Sprawl, Water Pollution, Forests, Fish); Global Climate Change (Kyoto and Beyond the Politics and Ethics, Global Climate Change Policy, The EPA and its Future); and Sustainability (Theory and Concept, Policy and Practice).

Columbia University’s International Relations of the Environment (International Affairs U6243/1) course examines issues central to the theory and practice of international environmental politics, providing a foundation of conceptual frameworks and factual knowledge important for individuals planning work in this or related fields. The course analyzes factors that contribute to or impede the creation and implementation of effective international environmental policy. Lecture topics include: Issue Areas in International Environmental Politics; The Process and Difficulty of Creating and Implementing Effective Environmental Policy; The Setting for International Environmental Politics: Issues, Trends, Law, Actors and Regimes; and Issues in Creating Effective Environmental Policy and Regimes. Course requirements include a final exam, group research paper, and reading and discussion.

Columbia University’s course titled Environmental Policy, Politics and Management (U6421) covers the following major topics: Superfund; Yucca Mountain; Ozone Regulation; Metals; Everglades; Spotted Owl; and Adaptive Management. Course Requirements include a group project and a final paper.

University of California, Santa Cruz’s course on Politics, Ethics, Political Economy (Politics 114) examines Green political thought and practice. It covers the origins and content of ecological politics, ethics and political economy, asking whether they offer a “realistic” alternative to neoliberalism and other political ideologies. The course considers the definition of Green politics, as
a distinct political movement with its own philosophical roots, and reviews the rise of Green political parties as a means of understanding their impact and chances for success. Lecture topics include: The historical roots of Green thought; Should rocks have rights; Nature and Culture: Too much or not enough; People: Boon or Burden? "Radical" Ecologies: Deep Ecology & Earth First; Eco-socialism & Social Ecology; and Postmodern ecology. Course requirements include four papers that analyze and critique the readings and oral presentations.

University of Santa Cruz's Global Environment Politics (Politics 174) is an upper division course focused on understanding how global environmental problems are addressed in different political and policy arenas. The lecture-format course considers the way international actors deal with the environment, from governments to NGO's to corporations, and examines what political mechanisms are available to help them. In addition, the internal functioning of several countries are compared. Lectures revolve around the following central themes: The Institutional Context of Global Environmental Politics; Globalized Environmental Issues; Localized Issues: Toxics, Biodiversity, Resources; Transnational Activism; and Comparative Environmental Politics. Course requirements include in-class pop quizzes, one take home mid-term and a focused research paper, group reading and discussions, and collaborative research for group presentation.

University of Florida's course on Politics, Energy and Ecology (includes lectures on the following topics. The Greening of American Politics; The Policy Setting: Institutions and Actors; Regulatory Policy: Generic Issues (Risk Assessment, Benefit/Cost Analysis, Environmental Justice, Market-Based Regulation); Regulatory Policy: Command and Control (Air Pollution: The Clean Air Act; Water Pollution: The Clean Water Act; Hazardous Materials; Energy: Fossil Fuels and Nuclear); The Road Less Traveled: Conservation (The Public Lands, Pollution Prevention, Materials Waste, Renewable Energy); and The Road Less Traveled: Sustainable Development (What is "Sustainable"); The South Florida Ecosystem Restoration; Sustainable Florida). Course requirements include two exams, a term paper and a final exam.

University of Wisconsin, Green Bay's Seminar in Environmental Science and Policy explores selected environmental problems in an interdisciplinary manner. In particular, perspectives from the environmental sciences, public policy studies, political science, economics, and public management are applied to view and analyze contemporary environmental problems. The problems emphasized change from year to year to reflect faculty and student interests and special opportunities for field and laboratory research and public policy analysis. A distinguishing feature of the course is a team research effort, which culminates with a colloquium and workshop at the end of the semester. The objective of this team research is to bring together people with differing policy and science backgrounds to consider future directions for environmental protection. The course is organized under the following sections: Environmental Problems, Science, and Public Policy; Sustainable Development: New Directions for Environmental Policy; Environmental Science and Sustainability; and Integrating Environmental Science and Decision Making: Governmental, Business, and Community Perspectives.

University of Wisconsin, Green Bay course titled Environmental Politics and Policy (835-301) is a survey of environmental politics and policy, primarily in the United States. The course examines: the nature and scope of environmental, energy, and natural resource problems; contrasting perspectives on their severity and policy implications; the goals and strategies of the environmental movement; scientific, economic, political, and institutional forces that shape policymaking and implementation; approaches to environmental policy analysis; and selected issues in environmental policy both within the U.S. and internationally. Lecture topics include: Environmental Problems and Politics; Judging the State of the Environment; Environmental Sustainability: Ethical and Critical Perspectives; Policymaking processes and the Environment; Environmental Protection Policy and Politics;
Panel 2: Methods for Teaching Environmental Management and Public Administration Issues

Panelists: Steven Cohen, Columbia University, Chair
Barry Bozeman, Georgia Institute of Technology
Lewis Gilbert, Columbia University

Panel Summary:

This panel discussed the unique issues posed by environmental management curricula within the broader context of public policy studies. One key issue that emerged was the scientific literacy of the student body. Many environmental management issues involve organizing technical staff and coordinating operations that involve complex technical issues. Environmental managers need to understand how scientists and engineers think about the world; however, the concepts are inherently challenging, so the issue becomes how to teach challenging topics to students who may not have the background to easily understand them.

Another issue discussed by the panel was the amount of management content to include in the core curriculum of the policy program. Obviously, it is easier to teach environmental management to students who have already learned some general principles of organization theory and operations management, which brought out the importance of group work in management courses. Group work enables those with specialized knowledge to learn how to deploy that knowledge in problem solving, and particularly how to communicate knowledge in a professional setting to people with diverse skills and background. It also allows those without the special knowledge access to others who have it, and so provides training for generalists in how to obtain specialized knowledge when they need it.

The panel discussed the use of management simulations as a way of teaching environmental management, and compared simulations, case studies and client projects. Each technique had costs
and benefits and the group discussed the need to match techniques to teaching objectives. For example, a management simulation makes it possible to teach the connections between program design, resource allocation, organization structure and performance measures. However, it is not a useful way to teach students about the type of management dilemmas faced by organizations in the real world, such as when political players parachute into an on-going process. Simulations do not teach how to learn client preferences and biases. These issues are best taught by real-world client-based workshop projects.

These real world “case studies” or client-request management analyses are problem-solving exercises where the results are presented to the agency for possible application. Although the real world approach may offer less flexibility in terms of issue selection, this approach provides students with an understanding of and insight into how real actors in the policy arena function. It also gives the students a true understanding of what it is like to work in the environmental field. One challenge for this model is ensuring students are not relegated to the most menial client projects. However, some felt this “menial” type of work is representative of some of what students will face in the workplace, and still provides students an opportunity to deal with the inevitable issues that arise.

Participants discussed how to grade students in either type of exercise. Team grades seemed most workable, although how to deal with “slackers” remained an issue. Some panelists believed that self-grading was too harsh, while team grades often were less fair.

Key Issues:

1. What is the most effective way to teach a workshop course – with real clients, or simulated exercises? How do you grade group work in a way that is fair to everyone?

2. How do institutions reward professors for teaching the workshop/capstone course, which is the most demanding of all courses generally?

3. What types of problems should these courses address, and how should the courses integrate theory? What level of theory do students need to succeed in the course?

Course Summaries:

Columbia University’s Workshop in Applied Public Management (U9231) centers around a management innovation simulation project, building a program for proposed or existing legislation. The simulation assumes the bill was passed and implementation begins on January 1. For example, one of the nine projects in the Fall 2000 workshop addressed The Community Revitalization and Brownfield Cleanup Act of 1999. Under faculty advisement, a student team addresses management problems associated with designing and operating a public program over a one-year period. Based on the legislation, the team must employ strategic thinking, economics, policy analysis, and program management in an interdisciplinary manner to create a sustainable program. Activities include memo writing, formal and informal briefings and report preparation. The project team is divided into task teams to complete the following project outputs: work plan, legislative summary, issue analysis and political background, literature review, midterm briefing/program design, organizational and staffing plan, budget and revenue plan, performance management system, master calendar for first year operation, final briefing and final report.
Georgia Institute of Technology’s course on Environmental Values and Policy Goals provides an overview of environmental values and techniques to evaluate outcomes of actions and policies that affect the environment. The first half of the course focuses on ethics and ethical theories supporting economic valuation. This section asks students to explore two traditional theoretical distinctions in environmental ethics: anthropocentric values and biocentric values; and individualism and holism. Students also examine the problems of scale and value as they affect theories of sustainable use of environment and resources. The third quarter of the course looks historically and analytically at how environmental policy goals have been articulated against the backdrop of diverse social values in the United States. The final quarter of the course examines several approaches to evaluating environmental effects such as cost-benefit analysis, contingent valuation techniques, multi-criteria analysis and evaluation within community-based management programs. Students will engage in these methods to understand concepts and assumptions of the approaches and their use in policy evaluation and implementation. In this course, students are required to give a class presentation and work on a class project (which includes a 12-15 page paper) and take midterm and final exams. The project is based on generalized topics and requires students to apply practical skills in analyzing these topics.

Syracuse University’s Managing for the Environment (PPA 730/9) course is also a practical application course. Students are introduced to current issues and trends in environmental affairs including accountability, unfunded mandates, ecosystem management, sustainable development, risk-based priority setting, managing for results, market incentives and environmental justice. The course examines environmental laws and implementation challenges, how managers can incorporate environmental management concepts into their organizations by linking strategies, structures and information systems, and strategies for overcoming political, economic and organizational obstacles to these concepts. Students learn methods for understanding, defining and communicating environmental risks and responses to employees, the media and communities. The class teaches students to practice constructive conflict resolution strategies for handling difficult environmental disputes; obtain tips on selecting and evaluating contractors and working with scientific professionals; and assess the effects for downsizing, de-funding, and devolution on the future of environmental management. Further, students analyze current studies of the National Academy of Public Administration concerning environmental management of the U.S. Environmental Protection Agency. Outputs required include: classroom role playing exercises, a research paper, a report on environmental management fieldtrip, a three minute elevator speech designed to teach students to communicate complex information quickly and effectively to busy decision makers and a final exam.
Panel 3: Treatment of Political Institutions, Legal Structures in Environmental Curricula

Panelists: Joseph DiMento, University of California, Irvine, Chair
           Peter Haas, University of Massachusetts, Amherst
           Lettie McSpadden, Northern Illinois University
           Denise Scheberle, University of Wisconsin, Green Bay

Panel Summary:

Much of the panel discussion focused on methods of teaching about environmental political structures and legal frameworks to students who may not become lawyers and almost certainly will not become political scientists. The study of interest groups and the role of interest groups in agenda setting was discussed as an important role for these courses. Stories and cases about the very visible and sometimes colorful history of environmental politics were seen as a way of teaching students about the institutional and legal structure of U.S. environmental politics. For example, the congressional override of Richard Nixon’s veto of the 1972 Federal Water Pollution Control Act can be used to teach about balance of power, legislative-executive relations and the provisions of this landmark piece of environmental law.

The panel discussed methods of going beyond environmental case law and allowing students to understand and apply legal concepts in active learning exercises. There was also a focus on teaching students to connect environmental law to the actions of environmental managers—to see how the legal structure influences the way that managers view the parameters within which they operate.

Panelists also discussed the ways in which legal methods have evolved over time, in terms of addressing environmental issues. For example, the past few years have seen a shift from a tort approach, using common law for compensation for damages, to command and control through stricter laws, to the current emphasis on voluntary prevention through environmental management systems. A debated issue was whether this change will work in the long run.

During the discussion period, the panel moved beyond the original topic to a focus on an issue that became a major theme of the conference—the development and maintenance of interdisciplinary programs and a reward structure that encourages rather than punishes interdisciplinary research and teaching. Virtually the entire faculty in attendance discussed the practical difficulties faced by environmental policy studies due to the absolute requirement for interdisciplinary study, teaching, and communication in this field. Workshop participants discussed the use of retreats, informal lunches, and more formal seminars as methods of improving communication. However, the issue of faculty recruitment and junior faculty promotion processes became the subject of intense discussion. The difficulties faced by junior faculty with an interest in the environmental policy area were mentioned by a number of participants.

Key Issues:

1. What is the best way to create a department that is truly interdisciplinary in focus, but provides professors with strong career opportunities?

2. How do you structure courses in order to provide cohesion to the program, without overlap? How are programs really interdisciplinary – in the definition of the problem, or the tools used to
analyze it? One way to consider this question is to argue that there are no economics problems or political problems, but environmental problems with multiple solutions.

3. How much specific information about environmental law and political institutions must environmental professionals be asked to learn? What type of conceptual grounding is needed in legal and political theory?

Course Summaries:

LAW

University of California, Irvine's Environmental Law (J128 or E105U) course introduces students to the scope of law. It addresses the modes of analysis which one can use to study environmental problems from a legal and policy perspective and teaches students to identify leading issues and common problems in environmental law. The approach does not attempt to be comprehensive in analysis, rather to study selected perspectives and philosophies surrounding specified environmental problems. The course teaches students to: understand the background and debate of an environmental controversy; learn relevant legal principles that apply to a controversy; use a case briefing framework to address the manifestation of a controversy; investigate steps in the resolution of the controversy, and explore alternative means of resolving the controversy. The course covers international, comparative, federal, state and local statutory, administrative, common and constitutional law related to environmental quality. Students are asked to work in groups to prepare, individually, for daily recitation. Students submit a written question raised by the reading in each class meeting. The course requires a midterm and final exam.

University of California Santa Barbara's course Environmental Law and Policy (no course number) covers the following lecture topics: Overview of Environmental Law, Environmental Torts—Causation and Remedies; Regulation of Hazardous Substances—CERCLA & RCRA (2 Classes); Protecting Natural Resources—National Environmental Policy Act; Protecting Natural Resources—Endangered Species Act; and Federal and State Regulation of Air Pollution.

University of Wisconsin, Green Bay's course in Administration Law (835-314) course teaches the legal principles affecting public administration; it reviews the legal constraints on the agencies of the executive branch. The course focuses on "legal limitations to the exercise of the power by the executive branch through discretion, rule making, and enforcement." Integral to the course will be the issues of why power has often been delegated to such agencies over the last fifty years, and the wisdom of having done so. The issues are important because they have very real implications for public managers. This course provides a background to these issues and an introduction to the aspects of administrative law that are important for professionals who choose to work in the public sector. Lecture topics include: Introduction to Administrative Law; History of the Administrative State/What do Administrative Agencies do? Executive Control of the Bureaucracy; Legislative Control of the Bureaucracy; Courts and Administrative Law; Government and Information; Informal Agency Activity; Rulemaking and Adjudication; Law of Public Employment; and Due Process of Law; and Suing the Government. The course requirements include writing brief summaries of cases to prepare for class discussion, as well as an open notebook midterm and final exam.

Another course from University of Wisconsin Green Bay titled Environmental Law (835-378) provides students with a basic understanding of major environmental laws that are currently in place. The course offers insights into the implementation of these environmental laws and the
issues that constrain major environmental programs. It addresses the way in which environmental laws are formulated and implemented, how they enter the legal arena, and how that process translates to affect citizens, industries, and state and local governments. Lectures include the following topics: Fundamentals of Environmental Law; Issues in Environmental Law (2 Classes); Common and Statutory Law; Resource Conservation and Recovery Act (2 Classes); Comprehensive Environmental Response, Compensation and Liability Act (2 Classes); Superfund, Hazardous and Solid Waste Issues; Superfund Amendments and Reauthorization Act; Implementation Stories of Environmental Law (2 Classes); Clean Air Act (2 Classes); Clean Water Act; The Ballona Wetlands Film; National Environmental Policy Act; and the NEPA and the Endangered Species Act (2 Classes). Course requirements include submission of three written assignments, an individual or team research project and a presentation on the research, and class participation.

INSTITUTIONS

Northern Illinois University’s Politics of Energy and Environment course (Political Science 324) introduces students to the way that policy process works in the United States to develop and implement public policy regarding the use of natural resources and the creation of pollution in the environment. The course considers the major problems that society will face in the 21st century regarding the natural environment, specifically in the areas of water and air pollution, depleted natural resources, human exposure to toxic materials, and the management of public goods such as nationally owned lands, including forests and parks. The course examines policies at the national and international levels to address these issues and considers alternative policies that have been proposed to handle them. Lecture topics include: Common Law Tort Dealing with Pollution; History of Pollution Control; Public Opinion and Policy; Environmental Ethics/Philosophy; Interest Group’s Role in Public Policy; Executive and Legislative Roles; The Role of Courts in Implementing Law; Administrative through the Executive; Water Pollution Control; Air Pollution Control; Solid Wastes and Toxic Exposures; Energy and other Natural Resources; Global Problems; International Solutions; Devolution vs. Internationalization; Trading Economics for Politics; and Sustainability? Utopia? Course requirements include a short informational test given during the first 15 minutes of every session, a take-home midterm and a final exam.

University of California, Irvine’s International Environment Management (E 127) course examines the management of environmental problems that manifest themselves internationally. The course identifies challenges in environmental quality and pollution control that occur across nation states and globally. Students review the institutions and strategies that have been created to address those challenges. They define "institution" in its broad social science sense, and identify the factors that successful institutions possess. The work is addressed in a context of various theories of collective action on an international stage. The course selects from works in law, the social sciences and management, including organizational studies, in attempting to understand the performance of managers and their institutions. Lectures cover the following topics: Meanings of International Environmental Management, and Where Do International Environmental Management Challenges Arise? Where Do Challenges Arise...A Regional Perspective/Introduction; What Institutions have been Created to Address International Environmental Problems? Regional Perspectives and Independent Study; Independent Study and Institutions; What Institutions have been Created to Address Them? “Going Green”, “Being Green”, “Flowerly Happy Talk”, Focused Operational Initiatives: What Strategies Exist to Promote International Environmental Objectives? Dispute Resolution; Which Factors are Linked to Effectiveness of International Environmental Organizations? and How is Compliance with International Environmental Management Requirements Promoted? The course requirements include reading and presenting an analysis of at least two articles in class. Each student is responsible for a specific area of learning chosen early in the quarter. To accomplish this goal, students must complete a bibliographic search, read five articles on a chosen
topic, and provide a two-page summary of the findings on the subject. Group work is also required
with students undertaking "update assignments" that require them to summarize changes in the field
which have occurred since the publication of articles read in class. A midterm examination and a
convention simulation are also required.

University of Massachusetts, Amherst’s **International Environmental Politics** course
(Political Science 797E) is designed to introduce graduate students to the theoretical themes
involved in the study of international environmental politics and to train students to conduct
research in the area of international environmental politics. It offers students a better understanding
of the dynamics by which preferred policies are likely to prevail through the study of politics of
collective environmental action in the international realm. Methodologically, the course focuses on
the use of case studies in research on international environmental issues. The course applies
theoretical strands of thought to analyzing specific issues and policy problems and helps students to
formulate interesting researchable topics. A study of international environmental politics provides
insights into contemporary international relations associated with globalization, uncertainty, and the
role of technical understanding in international politics and policy making. As such, it is part of an
effort to understand co-evolutionary changes in global ecosystems, human understanding of these
phenomena, collective efforts to address them, and social science efforts to theorize about human
behavior more generally. Lecture topics include: *Themes in International Environmental Politics,
Environmental History and the Growth of International Environmental Threats and their Recognition/History of
Multilateral Responses; Realism and Power Based Theories of Environmental Cooperation; Commons and Rational
Calculations of Interests; Political Economy and Markets; Institutions and Compliance; Constructivism and Learning
Post Modern Critiques—Critical Theory and International Discourses on Environmental Ethics and Norms; Civil
Society and NGOs; Radical Structural Views; Climate Change; Trade in Toxic Wastes.* Course requirements
include: class presentations summarizing and reviewing the key analytic themes in the material
presented that week and a research paper.

University of Michigan’s **Institutions for Sustainability** course (NRE 565) attempts to
examine the terms "sustainability" and "sustainable development," which are prominent in popular
and academic discussion as well as in policy debates, but are widely used and much abused. This
course attempts to give meaning to these terms both in their implications for reversing trends in
environmental degradation and for promoting policies that address long-term, ecological and social
goals. The course focuses on institutions, formal and informal rules and norms ranging from the
highly local to the regional, international and global; and sustainability questions of durable resource
use, production and consumption, property, development, trade, local-global interaction,
international cooperation, negotiation and facilitation, and equity. The course aims to build analytic
tools that a member of government, the NGO community, or a business could use in a variety of
environmental situations from the local to the global. The course encourages students to: analyze
institutional processes including actors’ roles, decision-making rules, world views, and sources of
legitimacy; analyze real-life situations and decision problems for their contribution to sustainability;
develop criteria for choosing among analytic tools and apply them to explain, compare, predict and
prescribe; and develop negotiation and conflict management skills, especially in multilateral and
cross-cultural settings. Lectures center around the following topics: *The Local; The International; The
Regional; NGOs; The Corporation; Property; Consumption; Security; Diplomacy; and The Global; Trade, Ecology,
International Organization.* Course requirements include a number of short written assignments given
during the semester, final simulation activity, final examination, class participation in case
discussions and simulations.
Panel 4: The Role of Economics and Policy Analysis in Environmental Studies

Panelists: Carol McAusland, University of California, Santa Barbara, Chair
B. Myrick Freeman, Bowdoin College
Linwood Pendleton, University of Southern California
Alex Pfaff, Columbia University

Panel Summary:

The panel discussed the applicability of economic reasoning to environmental policy issues. Panelists spoke about the methods employed by economists to use the power of economic models to provide insight into the causes and effects of environmental problems. They also addressed the need to teach the limits of economic models as a reason to use interdisciplinary methods to understand and solve environmental problems.

As in previous panels, participants addressed the issue of prerequisites, regarding what type of curriculum background should be required of students in order to prepare for these courses. The panelists noted that some of the courses discussed seemed to be more economics courses on environmental issues than environmental studies courses that used economics as a method of analyzing environmental policy. This fact seemed to make it easier to deal with the prerequisite issue, since any upper-level economics course will require introductory economics. However, this makes the courses inaccessible to those with little economic training, and narrows the potential student base for these courses substantially from others discussed at the conference.

In general, the heterogeneity of the student body and different levels of math preparation and ability made it difficult to know the level to teach environmental economics courses. Some panelists reported that some of their students reported feeling overwhelmed, while other students observed that the analytic depth of the course material was too light. As in the science panel, instructors discussed the need to maintain rigorous standards of disciplinary knowledge. This entailed covering the concepts at a level that was challenging for novices, while sometimes was easy review for the students with more economics training. It also often meant requiring students to brush up on skills and to divide the work into group projects to accommodate the different disciplinary backgrounds and varied skill levels of different students (similarly to how tasks may be divided on teams in the real world).

The participants also grappled with the right mix of practice versus theory, reaching the conclusion that there needed to be enough theory to explain environmental policy issues and enough specific policy to make it possible to understand the operational value of the theory. One panelist noted that economics could help students learn how to deal with complex problems, and that environmental problems tended to be quite interconnected and complex. Economics can be used to simplify the world and isolate a problem for rigorous and systematic analysis. The problem, some panelists noted, is that many economists forget their analysis is a simplification, and so forget to introduce the complexities to create a realistic analysis. Economics has excellent tools for identifying and discussing trade-offs, which often are central to any thorough discussion of environmental issues, but it is not in itself a complete, explanatory model for these issues.

There was a spirited discussion of the appropriateness of economics as a tool of environmental policy analysis. Some participants expressed concern about the tendency of economists to ignore alternative explanations from other disciplines and the “imperialistic”
ambitions of the field. There was a discussion of the frustration of environmental economists in convincing their disciplinary colleagues to consider broader, interdisciplinary analytic frameworks.

Key Issues:

1. Is economics an effective tool to use for studying environmental issues? Are there biases inherent in the discipline, for example toward optimal resource use? Or, what if there are not scarce resources?

2. What is the most effective focus—environmental economics, or a traditional neoclassical approach? There is a “higher normative content” in the ecological approach, and environmental studies is often concerned with normative issues.

3. How to put the complexities of the issues into the economic models used; economics tries to isolate variables in analyzing issues, but in practical, real-world focused courses these variables inevitably need to come back in. How do we modify the models to integrate these variables, or do we?

Course Summaries:

The goal of Bowdoin College’s course titled Environmental and Natural Resource Economics (Economics 218) is to deepen students’ economic and ecological literacy by applying basic economic concepts and tools to the analysis of environmental degradation in forms such as pollution, resource and private responses to environmental degradation, in terms of their goal attainment, cost-effectiveness, equity, and long-term sustainability. The course encourages students to consider the ecological economics perspective: a way of thinking about relationships between our species and “nature,” starting from the premise that economies are open sub-systems of ecosystems, co-evolving with them and subject to fundamental biogeochemical “laws” and scale (or carrying capacity) limits. This perspective leads naturally to an emphasis on the long-term sustainability of our particular economic system—globally integrated corporate capitalism—at every scale, from local to bioregional, national, and global. Lecture topics include: The Economy with the Ecosystem (2 weeks): Is Global Capitalism on a Sustainable Path? Environmental Ethics: Good and Bad, Right and Wrong. Economic Analysis of Environmental Degradation (3.5 weeks): Environmental Degradation and Death: Valuing Human Life; Discounting the Future: Economics and Ethics; Consumption, Well-being and the Environment. U.S. Environmental Protection Policies (3 weeks): From Command-and-Control to Incentive-based Policies; Election Year Politics, Political Clout, and Environmental Policy. Economics of Energy, Natural Resources and Ecosystem Services (3 weeks): Maine’s North Woods: A Strategy for Sustainable Multiple Use Management; Preserving Biodiversity: Economic, Evolutionary, and Ethical Perspectives. From Environmental Protection to Sustainable Economic Development (2 weeks). No pre-requisites are listed for this course.

Columbia University’s course titled Economics of Sustainable Development (W4329x) aims to build upon previous economic training in considering the question “if you were charged with pursuing sustainable development (as Minister of the Environment, for instance), how would you choose between two specific policies A and B, and what sorts of [economic and other] things would you want to know before deciding?” It emphasizes, although does not solely focus on, microeconomic concepts, considering intuitions and principles more than basic micro mechanics. The course does take a general microeconomic/cost-benefit analysis approach to policy choice, with the distinguishing feature being its focus on ‘sustainability.’ This leads to a focus on a number of
economic sub-fields. How a focus on 'sustainability' differs from a focus on 'efficiency' is a central theme. The course is organized under the following topics: A Model for Considering Sustainable Development Policy; Starting Model for Sustainability Policy; Definitions of Sustainable Development (more on our basic model); Development & Sustainability: Relation to Environment/Resources, Population and Growth; Economic Concepts with Implications for Sustainable Development; Basics of Individual Choice-Making and Markets; Applied Shifting (prices, preferences, and substitution); Externalities & Inter-national/Generational Concerns & Cooperation; Efficiency vs. Optimality vs. Sustainability / Explicitly Considering the Future: Uncertainty (and Irreversibility); Discounting; Extensions: Ecological Economics, Marx/Weber; Implementation of Sustainable Development; From Theory about Utility to Numbers for Policy; Policy Numbers: Cost-Benefit Analysis (CBA) Basics and Examples; Policy Numbers: National Accounts Basics and Examples. Pre-requisites for the course include Introductory Micro plus Intermediate or a more preliminary Environmental Economics course, although the professor can waive.

Columbia University’s Economics of the Environment (W4625y) course builds upon student’s previous economic training when considering: “What about environmental and resource questions makes them different from other economics questions and, given that, what additional useful things does economics have to say, in particular, that would be relevant for policy?” Both conceptual/methodological topics and applications are covered. The economic concepts are mostly although not solely microeconomic. The course looks at economic intuitions and principles as well as the use of the basic microeconomic analytical tools (such as simple graphical analysis of marginal decisions). The course addresses the following key questions: How does standard microeconomics apply to these questions? If natural resource use is simply an inter-temporal choice, why worry about running out of resources “too soon”? Why is non-renew-ability of natural resources important? What is open access, and how can property rights be important for efficiency? How do those rights matter for equity? What is the basic feature of environmental problems that raises problems with standard micro prescriptions? Does that feature necessarily indicate the need for intervention to attain standard micro goals? Could “command and control” be as good as “market mechanisms”? Do different market mechanisms differ in important ways? What about in a dynamic sense? How does the law come into all of this? Do “green taxes” yield a “double dividend”? Is environmental regulation “win-win”? What information do we need for setting the right regulations, and what are some ways for getting what we can’t get in the standard micro way? What happens if people cheat, or disagree? Pre-requisite for the course is an introductory microeconomics course although the professor can waive.

Georgia Institute of Technology’s Environmental and Technological Risk Management one-year course (Public Policy 6324) addresses the following topics. Topics covered in the first semester include: Conceptualizing Risk; Industrial versus Ecological Risk Assessment; Risk Perception I & II; Risk Communication; Cultural Attitudes toward Risk; Indicators of Risk Acceptability; The Management of Risk I; and Dealing with Uncertainty. Second Semester topics are: The Knowledge Economy; The Management of Risk II; The Politics of Risk; Political Ecology; Standardizing Risk Assessment; Ecological Risk Assessment; and Case Study Analysis.

Trent University’s course on Environmental Risk Assessment (ER 307) explores emerging approaches to risk assessment (techniques of risk analysis) and their application to the management of social and environmental programs and the regulation of technology. The course is organized under two general aspects: specific techniques presented and illustrated through examples; general issues discussed on a regular basis. Students gain experience with relevant techniques of analysis, as well as acquire an awareness of the larger social and political questions that arise. Among the technical subjects to be covered are exposure assessment, physical and biological pathway
analysis, dose-response analysis, and aspects of decision theory. Typical issues to be raised concern
the social acceptability of risk, the cultural meaning of risk, the institutional arrangements necessary
for the management of risk, and the role of science in the evaluation of risk and the design of social
programs. There is no pre-requisite. The professor requires a self-evaluation, without which the
student fails.

The purpose of the University of California, Santa Barbara’s course Microeconomic
Principles for Environmental Management (ESM 151) is to introduce students to “the economic
way of thinking” when addressing real world issues. The course addresses material through a series
of real life questions ranging from individual decisions to public policy questions and a sequence of
experiments and case studies. The course is divided into three parts: Individual Behavior and
Choices, Functioning Competitive Markets, and Sources of Market Failures and Potential
Interventions to address these Failures. The course lectures include: The Economic Way of Looking at
Behavior; Utility, Individual Choice, Demand, Consumer Surplus and Uncertainty; Producer Theory (Profits, Costs
and Supply Curve); Market Equilibrium and Market Efficiency; The Problem of Externalities and the Case
Theorem; Private Solutions to Externalities and the Practice of Public Sector Solutions to Externalities; Efficiency
Feet” and the Provision of Local Public Services. Course requirements include participating in a class
experiment where classmates are the participants in a fictitious market as well as the scientific
observers who try to understand the results. The experiments and the material presented in class
will be complemented with two case studies. Other requirements include a two-page report of each
case study and an oral presentation; an oral presentation of a small article from a newspaper; two
problem sets; a two-page “lab report” on a class experiment, and a midterm test. The required
readings for the course include Varian, a basic text for advanced microeconomics typically used in
the first year of a Ph.D. program.

UCSB’s Economics for Environmental Management (ESM 204) covers a wide range of
material with the purpose of providing students with a solid foundation in aspects of economics,
operations management and quantitative policy analysis that are important to environmental and
natural resource management and policy. The course is divided into four sections: Resources, Public
Choice, Valuation and Environmental Regulation. Course requirements include a midterm and a
final exam, homework assignments and class projects. The course is taught at quite an advanced
level, with a year-sequence of Ph.D.-level microeconomics required.

University of Southern California’s course in Advanced Resource and Environmental
Economics (Economics 587) covers the application of microeconomic theory to the management
of natural resources, pollution, and environmental hazards. Topics covered include: Introduction to
Resource and Environmental Economics; Dynamic Optimization of Welfare; Resource Rent and Property Rights;
General Resource Scarcity; Exhaustible Resources; Renewable Resources (Timber, Water, Open Access Resources);
and Environmental Economics. Pre-requisites are two courses, Economics 487 and 500, or instructor’s
permission.
Panel 5: Methods for Addressing Science and Technology Issues in Environmental Curricula

Panelists: Tony Rosenbaum, University of Florida, Chair  
Jim Simpson, Columbia University  
Barry Bozeman, Georgia Institute of Technology

Panel Summary:

One major issue that developed in this panel was how much scientific knowledge students should be required to obtain before enrolling in science and technology courses. Some panelists felt it to be “crippling” if students did not receive enough scientific training in the course, as if they could not manage the additional content. These instructors strove to provide the content, even if in a “lighter” format. Others made the course more of a policy course for scientists, assuming no previous knowledge but allowing any topic to be addressed by a variety of scientific approaches. This meant the scientists could approach policy problems using their tools, and the policy-grounded students could adapt those tools using the techniques of policy. These courses focused more on how scientist and non-scientists communicate with and work with one another, and provided the tools to do so.

Many of the courses used a group problem-solving approach, successfully, simulating responses to real-world scenarios. These courses also demonstrated how science could provide guidance for policy solutions at a non-technical level, as in how climate prediction can help alleviate agricultural problems. This provided both scientists and practitioners the ability to understand how science can be effective in the policy arena.

However, there was some discussion on what prerequisites are required at the program level. Some on the panel believed that for students concentrating in science, technology and the environment, solid scientific training was required before enrolling in the program. One participant from a program that had tried several models reported that the one garnering most interest was a truly interdisciplinary model, where any student could apply and learn all the needed science in the program. This approach had the notable result of graduating a philosopher as the top student in its first year.

As in other panels, the diverse backgrounds of the students interested in environmental policy posed a great challenge to instructors. Group projects can be used to provide students with an opportunity to learn to explain complex policy issues to scientists and complex scientific concepts to policy analysts that lack training in ecological sciences.

The session included a discussion of scientific literacy and the type of literacy required for policy analysis. One participant noted that the key was to teach analysts how to question scientists and elicit their views on areas of uncertainty. The issue of literacy was defined by one panelist as the ability to understand scientific methods and concepts, but did not require the ability to conduct experiments and analyze them. Another panelist noted the usefulness of fieldwork as a method of building this literacy while conducting simple forms of research.

Key Issues:

1. How much science background should be required as a prerequisite for students? Should the courses be policy focused, or sciences focused, or include both?
2. What prerequisites should be required for students in the program? What is the best model to use when designing program curriculum? How do you incorporate interdisciplinary methods without losing the depth of singular disciplinary approaches?

3. What is the best method in which to provide students real world experience?

Course Summaries:

Columbia University’s Science and Technology Policy (Public Affairs U8400) course examines science and technology policy, from its very beginnings, through its evolution to contemporary issues in science and technology. Lecture topics include: What is Science and Technology (S&T) Policy? History of U.S. S&T Policy; Evolution of the U.S. National Innovation System (NIS); The Role of Scientific Experts in the S&T Policy Making Process; The Making the Federal R&D Budget; Economic Theory and S&T Policy; Instruments of S&T Policy; Contemporary Issues in S&T Policy: The Need for Indicators; Science and Policy Values in a Democracy—The Case of Stem Cell Research; Balancing Objectives: The Case of University-Industry Research Relationships; Pork Barrel vs. Peer Review; Different Strokes for Different Folks: S&T Policy in Developing Countries; and The Limits of S&T. Course requirements include a midterm and a final paper.

Trent University’s course titled Environmental and Resource Studies (ER 210a) addresses how science fits in the “real” worlds of politics and decisions. The course designs opportunities for students to work on current policy issues at the municipal, provincial, and federal levels. It examines the relation of science to environmental policy and politics in helping to address environmental issues, as well as to address problematic aspects of these issues. Students consider science and policy as encountered in several specific areas of environmental politics including environmental ethics; management of natural resources; environmental risks; international environmental problems; and environmental issues in northern Canada. As the role of science in environmental politics is often a matter of debate, the course examines the following questions and issues: What is to be done when scientific information is uncertain, or when “the experts” disagree? What is the distinction between matters of science, and matters of politics, and who should make this distinction? How can scientific expertise help ensure that all interests in society are considered in environmental policy? Are scientists the only reliable sources of knowledge about the natural environment?

Lecture topics cover the following six sections: Science, Ecology and Environmental Ethics; Science and Natural Resources Management; Science and the International Environment; Science and Risk; Science in Northern Canada; and Using and Communicating Science. Course requirements include a short essay discussing the role of science in two print media articles, an essay relating to the seminar project, a group presentation of seminar project, written answers to a series of seminar questions and a final exam. The course assumes no prior knowledge of science beyond what is gained in the Environmental Studies general survey.

University of Florida’s Comparative Environmental Regulation seminar (POS 6933) focuses upon the political, administrative and substantive aspects of environmental regulation as a policymaking process in different national contexts. An initial characterization of national regulatory concepts and models is identified through an extensive examination of the development and implementation of environmental regulation in Western industrialized nations, with emphasis upon the United States and Western Europe. Particular attention is given to decision-making processes and policy paradigms — such as risk analysis and market economics — inherent to these regulatory
regimes and to the impact of distinctive economic and cultural settings on regulatory practices. The latter portion of the seminar focuses upon problems of governmental regulation distinctive to Eastern Europe and other non-Western national settings. The utility of Western regulatory models for national environmental management in other settings is examined together with problems involved in the implementation of international environmental regulatory regimes among nations with highly variable regulatory capabilities. Lectures are organized around the following main themes: Global and Regional Indicators: Air, Water, Toxics and Waste (Global and Regional); The Regulatory Setting (Development of Global Environmentalism, Regional Environmentalism, Actors, Institutions and Culture); Generic Policy Issues (Risk Assessment; Indicators and Technical Information; Cost-Benefit and Related Policy Approaches, Equity, Institutional Capacity); Policy Alternatives: Western Models (Command and Control; Market-Driven Alternatives; Hybrid Approaches); Exporting Western Models: Problems and Prospects (The Limits of Western Models); Alternative Regulatory Paradigms: Sustainable Development and its Limits; and The Appeal and Limits of International Regulatory Regimes. Course requirements include two class presentations and a research paper. The pre-requisite is any undergraduate course in Economics, public administration, or multiple types of politics courses.

Panel 6: Ethics, Values, Justice and Perceptions in Environmental Curricula

Panelists: Steve Rayner, Columbia University, Chair
Bob Paehlke, Trent University
Linwood Pendleton, University of Southern California

Panel Summary:

These courses formed the more normative core of the panels, and a good deal of the discussion revolved around how to fit normative issues into an environmental curriculum. All agreed on the importance of doing so but differed on methods.

Some respondents worried about the courses being treated as “catch-all” courses for issues that were not dealt with in other, more quantitative coursework. The panelists agreed that many of their quantitative colleagues, especially in economics, felt that ethics were unnecessary to teach in their classes, that their disciplines were devoid of normative issues.

In anthropology, in another example, there are multiple models, all of which could be used and have different implications for value judgments. If all models cannot be taught, at least it should be explicitly acknowledged that there are multiple models. In general, the group felt more instruction on their topics in other courses would provide a good “prerequisite” for their courses. Courses in ethics and values contributed a more skeptical perspective on the ability of the various disciplines to be truly non-biased. For example, one panelist discussed his use of the conceptual underpinnings of economics to point out that social sciences express values and a clear view of the important factors that must be understood to explain how the world works.

In order to approach their topics, most panelists used philosophers and other justice scholars. Frequently their courses involved developing an understanding of a variety of world views, or environmental paradigms to allow students to understand different ways of framing the ethical debate, and place thinkers in the various paradigms. The panel discussed methods of teaching different ways that humans perceive the environment. In addition to the paradigm development, most courses used a selection of other disciplines in an interdisciplinary fashion to help understand
the policy situation. For example, an energy conservation issue might be addressed through economics and international political theory.

One panelist noted that the issue of environmental perceptions did not receive enough attention in the environmental policy curricula. How people perceive and value the environment is a key influence on policy decisions. According to this view, students need to understand the subjective nature of environmental perceptions and their link to culture in order to achieve a sophisticated understanding of environmental policy issues.

Key Issues:

1. What is the appropriate role for ethics in courses? Does it belong in a separate course on ethics, or should it be included in all courses?

2. When ethical justice issues are taught, is there an obligation to teach all points of view for “models” or should instructors prioritize?

3. How do instructors include perceptions of students in the debate—what is the most effective manner to integrate students’ views with the “official” viewpoints of scholars?

Course Summaries:

Columbia University’s course titled Introduction to Environmental Sociology (U4000) aims to familiarize students with a wide spectrum of issues. These issues include: the historical evolution of contemporary ideas about nature and the environment, the role of scientific knowledge in environmental controversies, the dynamics of environmental social movements, perceptions of environmental and technological risk, environmental justice, sustainable development, and globalization. Lectures topics address the following areas: Environment and World Views; Social History of the Environment; Environment as a Social Movement; Population, Consumption, and the Environment as Resource; Science and Environment; Deep Ecology and Ecofeminism; Social Theories of Risk; Environmental Justice; from Environmental Management to Sustainable Development; and Globalization of the Environment. The course requirements include weekly briefing papers on readings, a term paper, and a midterm and final exam.

Trent University offers a full year Environmental Ethics (ER 330) course. This course addresses ethical issues arising from human interaction with the natural environment within a philosophical context. The seminar discusses themes of domination of nature, the allocation of scarce resources, animal rights, social benefit and technological risk, conservation/preservation, and obligations to future generations. Students consider topics such as social and political ecology, deep ecology, eco-feminism, and feminist theory, and how they influence environmental ethics. Students are encouraged to explore environmental aesthetics, postmodern thought, “thinking about the natural” and other aspects of environmental philosophy understood in a general sense. Students are required to frame and identify a research question and then formulate and develop a thesis from that question. The seminar requires a proposal, an essay, and a formal presentation on additional readings on lecture topic, as well as exams and notebooks. Peers evaluate the presentations, and students are also required to self-evaluate to obtain the participation portion of the grade.

Trent University’s full year course titled Public Policy and the Canadian Environment (Canadian Studies, Political Studies, ERS 310) is team-taught and addresses Canadian environmental
policy and politics in a comparative perspective. The objective is to provide students with an overview of how and why environmental policies are adopted (or not adopted) and to provide an understanding of the options available to governments. The course also includes the study of the politics of the environment including the ethical factors on which such politics rest. The course assesses the tools of environmental policy analysis and policy implementation as well as the connections between environmental policy and other issues that governments and societies must address. Topics covered include: Environmental Values: Conservation and Wilderness, Pollution, and Sustainability; The Economy-Society-Environment Model and Environment Policy Analysis; Measuring and Evaluating Ecological Impacts, Pollution and Sustainability; The Tools of Environmental Policy Making: Regulation, Deregulation and Voluntary Initiatives; Greening Taxation, Subsidies and Subsidy Removals, ‘Pure’ Market-based Approaches—Green Products and Governmental Procurement; The Difference Between Democracy and the Market; “Pure” Coercion—Polluters as Criminals; Policy Linkage: Environmental Justice, Equity and the Environment, Urban Form and Environmental Protection; Environmental Policy in Historical Perspective; Canadian Environmental Policy at the Millennium; The Regulatory Framework; Federalism; Policy Actors: The Bureaucracy, Business, Environmentalists; Emerging Issues in Environmental Policy: Globalization, Deregulation, Voluntary Initiatives, The Question of Justice; and Building Alternatives. Course requirements include: two essays (one each term), an oral presentation, a mid-year test and an end-of-year exam.

The University of Michigan offers two courses on environmental ethics and justice issues. The first course, Environmental Justice: Domestic and International (SNRE 492) examines the connection between communities of color and low-income groups with the location of hazardous waste facilities, as well as the movement of hazardous waste from developed countries to developing ones. The course uses lectures, case studies, videotapes, guided interactive discussion, outside speakers and a computer-designed interactive study program as teaching tools. The lecture topics include: History of Environmental Justice; Culture (2 classes); The Social Structure of Accumulation (2 classes); Race as a Social Construct; Resource Mobilization (3 classes); Key Research Issues and Findings (5 classes); Migrant Workers and Health Related Issues; Environmental Justice and the Challenge to Positivism; Environmental Rule Making and Economic Issues (2 classes); Environmental Justice and the International Perspective (5 classes); and Looking to the Future (2 classes). Students are required to produce the following outputs: a written case study on environmental justice to be placed on the Internet (students required to learn HTML and the logical structure of a web page for their case study), a Legislator Score Card Assignment, a midterm and final exam. There are no pre-requisites listed; the course fulfills a “race-ethnicity” requirement for the program.

University of Michigan’s course on Research Seminar on Environmental Equity and Justice (SNRE 594) focuses on data analysis and analytical constructs to help students with their understanding of environmental justice and with formulating and testing hypotheses. Over the last three years, computer information was downloaded from the state of Michigan on toxic release inventory (TRIs) citations, Act 307 and Superfund sites, Leaking Underground Storage Tanks (LUSTS), commercial hazardous waste facilities, MEAP test scores of all Michigan children by school and by zip codes, and census data. These databases have been merged and organized and are ready for analysis. The course aims to generate quantitative data to inform the environmental equity and justice debate to support the thesis that communities of color are impacted disproportionately by environmental hazards. As the debate currently centers on anecdotal comments or on debates challenging various levels of proof or causality, this seminar hopes to contribute to informed debate by providing quantitative analysis of data collected by government agencies to enhance the awareness of policy makers and lay people. The goal is to lead to changes in policy and the need for further environmental justice research in various areas of the field. The seminar is for graduate students with existing quantitative skills. The purpose is to help students increase quantitative and
analytical skills, and the awareness of environmental justice issues; to provide opportunities for faculty and students to co-author papers for peer review journals; to encourage students to learn about the differential impacts of toxic exposures on low-income and minority communities; and to give students practice in the process of proposal writing. Course requirements include: three individual public instruction sessions with each student, oral and written presentation of data analysis, and final paper and oral presentation of paper.

Course lectures include the following topics: History of Environmental Justice; Differences Between Action Research and Quantitative Research; Methodological Issues in Environmental Justice; Poverty: What is Poverty? How does Social Stratification Based on Occupation and Wealth Affect the Distribution of Environmental Benefits and Burdens? What are the Issues in the Meaning of Poverty? How is Poverty Defined in the U.S. Census? What are Other Ways of Measuring Poverty? Race: What is Race? What are the Issues in the Meaning of Race? How is Race Currently Defined and Assessed in the U.S. Census? What are Other Ways to Measure the Impact of Race (i.e.: self-report v. legal definition v. biological definition)? What is the Definition of Environmental Racism? What is the Definition of Environmental Equity? What is the Definition of Environmental Justice?

Panel 7: Workshop Projects, Internships, Case Studies and Other Applied Elements of Environmental Curricula

Panel: Sheldon Kamieniecki, University of Southern California, Chair
Bill Eimicke, Columbia University
Daniel Press, University of California, Santa Cruz

Panel Summary:

These courses ranged from actual internships to semester-long workshop courses which provided real work experience, usually with an actual client from the non-profit or government sector.

There was general agreement on the efficacy of these courses. They provide students with good work experience, clients with free work, and enhance the programs' reputations. Topics are generally of high interest to the students.

Some issues did arise, however. First, clients occasionally do not provide interesting, value-added work for the students, but use them for work other employees do not want to do. Professors need to be diligent to correct or prevent this situation. In addition, housing can be a problem if the internship or work is not in the area.

Many instructors found that grading students on internships or workshop projects to be complicated. Do you use the clients' perspective? How can the instructors ensure that each student is fairly judged? Related to this issue, ensuring that the students are competent and can handle the internship demands often requires allowing clients to review students' employment backgrounds, or at a minimum, GPA and course curriculum completed. The skills on which these courses focus include client and interpersonal relations, data analysis, and presentation.

Most workshop participants expressed strong support for the notion of learning by doing. Experiential learning can help provide students with a more profound understanding of the complexities of environmental issues and the various interests at stake in an issue. Many environmental policy students are attracted to the study of the environment due to their desire to
reform environmental policy. The tendency toward advocacy without realism, which can sometimes inform policy formulations from recent graduates, can be countered by these real world experiences where students learn that environmental issues are not always clear and easy to define.

Key Issues:

1. How do professors/institutions best build trust and partnerships with community agencies to ensure an opportunity for valuable and substantive student project work?
2. In what ways do we ensure that students have the appropriate skill level to meet client project requirements?
3. How do you manage client expectations of student work?
4. How much instruction and mentoring should faculty provide and when? At what points do students require preparation and time for reflection in order to maximize their learning from these types of experiences?

Course Summaries:

Columbia University’s Workshop in Applied Policy Analysis (U9232) provides second year graduate students a unique opportunity to embark on special analytic projects for public and nonprofit agencies. Under faculty advisement, student teams work with individual clients in New York City in a consulting role to define and solve a particular problem. Students must design an appropriate plan for fieldwork, data collection, research and report writing and briefing given the semester time constraint and other limited resources. The Spring 2000 Environmental Workshop on “Brownfields and the Future of the New York City Waterfront: A Project to Improve the Urban Environment and Create New Parks and Economic Development” provided students an opportunity to work with The New York Conservation Education Fund, an affiliate of the New York League of Conservation Voters. Students were responsible to research information from the EPA and the NYC Mayor’s Office of Environmental Coordination and to identify and map the location of major brownfields, documenting the sources and amounts of government funding for brownfields reclamation presenting case studies, one brownfield site in each borough, including its reclamation costs, funding sources, and potential redevelopment opportunities. Minimum outputs required include: a work plan, a draft report, a mid-term briefing on the project’s progress, an oral briefing of the draft report to the Workshop, a final report and an oral briefing of the final report to the client. Client needs and requests may expand output requirements.

University of California, Santa Cruz Methods in Environmental Policy Analysis (ENVS 196B) introduces students to quick, researched methods of policy analysis. As many students find themselves in careers requiring them to assess environmental policies accurately and rapidly, often with much less information than would be ideal. This course assumes that there is never enough time to perform the kind of research that most serious environmental problems warrant, but that action will often be taken anyway. Hence, the environmental policy analyst must be able to offer credible, well-supported advice and analysis rapidly, and reveal biases, normative commitments and uncertainties in the process. Students are expected to gather a great deal of data, both quantitative and qualitative, on every topic they study in this course. Lecture topics include: The Policy Analysis Process; Spreadsheets; Gathering Data, Basic Data Analysis and the Visual Display of Information; Problem Definition; and Evaluation Criteria. Course requirements include weekly exercises, skills portfolio, participation in a group policy analysis exercise, policy memo and class participation.
UCSC's course titled National Environmental Policy (Environmental Studies 140) provides an overview of current environmental issues and policies of the United States in the 1990's and beyond. This course explores public policy concepts and instruments, and examines their application to specific environmental issues. The course assigns readings to provide conceptual basis for discussion and research as the course focuses on the "hands-on" aspects of program implementation. The course requires students to write policy briefs as an applied method of learning.

Conclusion:

It would be a serious omission from this conference summary if we did not mention one of the intangible benefits of sessions in Arizona: The informal communication among scholars and teachers of environmental policy that took place at the conference. A sense of shared purpose and community was built during our brief time together. While many of us were familiar with each other’s work and had interacted before at professional meetings, rarely have we had the opportunity to talk about our role as teachers and as environmental policy educators. We found a great deal in common when we compared the frustrations of building an interdisciplinary field in universities dominated by traditional disciplines. The issues of curriculum and program development, hiring and promotion were common at virtually all of our universities. Participants frequently discussed the heterogeneity of background of our students and the teaching challenges caused by this diversity. We explored and exchanged useful strategies for dealing with these issues.

The distinctiveness of the Biosphere 2 Campus and its beautiful surroundings formed a spectacular backdrop for a memorable set of panels. In many respects, this location is a natural location to convene serious discussions of environmental issues. The natural ecology that is in danger throughout the world still exists with great beauty in Oracle, Arizona. Those surroundings contributed to the sense of contemplation that permeated the meeting, and to the sense of purpose of its participants.