Environmental Policy & Mgmt (EPM)

Courses

EPM 4001 Environmental Foundations and Principles (4 Credits)
This course is an introduction to the field’s history, current actives and issues, ethics, systems, and economics; and an overview of key necessary knowledge and skills to work and learn within the field. Students will: gain a strong historical understanding of how environmental and natural resource issues have influenced economic development and societal growth throughout the ages; learn about the complexity of environmental issues and the value of interdisciplinary and systems thinking when applied to making decisions about natural resource usage; understand the important role that empirical science, policy analysis and advocacy play in how governments and private companies address complex environmental issues; become aware of the stressors that ecosystems around the globe are experiencing and the value of multidisciplinary approaches to addressing these challenges; and understand the diverse employment opportunities available in the environmental field.

EPM 4002 Integrated Environmental Systems (4 Credits)
The earth as a whole is comprised of many systems that affect the environment. Some have large wide ranging reach, while others are restricted to a relatively small area. Included is everything in between. Actions in one area or system may have unintended secondary and tertiary consequences in that system or others. This course uses various tools and materials to study a few environmental systems and determine connections, consequences, impacts, barriers, decision making, life cycle costs, etc.

EPM 4003 Environmental Finance and Economics (4 Credits)
This class provides an overview of economics and finance in an environmental context. Topics include an overview of the economic system, efficiency, equity, market failure, environmental regulation, benefit-cost analysis, valuing the environment, pollution control, energy, conservation of natural resources, performance metrics, risk and return, time value of money, cost of capital, returns on investments, and standard financial reports. The class makes use of reading assignments, written assignments, case studies, and class participation. The course emphasizes relationship between business management and environmental quality, and provides students with a financial and economic decision-making framework for understanding and analyzing environmental issues.

EPM 4040 Wetland Ecology and Management (4 Credits)
This course provides a detailed examination of aquatic communities and habitats with an emphasis on freshwater systems. The recognition, identification, classification, and maintenance requirements of various wetland communities are stressed. Students analyze Section 404 of the Clean Water Act and the permitting process. Guidelines for placing dredge and fill materials in wetlands and other construction projects that directly or indirectly affect these areas are reviewed. Students explore concepts related to regulatory enforcement, mitigation, and the need for additional policies and actions to sustain as well as protect these critical communities.

EPM 4108 Impacts of Recreational Use (4 Credits)
The practical and theoretical basis of recreational use of public and private lands is examined in the context of ecosystem management. The statutory and regulatory policies and current issues regarding the management and use of lands in wilderness systems, wild and scenic river corridors, parks, and open spaces are discussed in detail. The impacts of recreational uses on the environment and conflicts with other uses of land and resources are discussed. Land use planning policies and decisions which respond to recreation, wilderness and open space issues are examined. Field trips to Rocky Mountain National Park, Chatfield State Park, or other outdoor recreation sites will be scheduled to supplement classroom meetings.

EPM 4115 Introduction to Ecology (4 Credits)
This course examines the concepts of the ecosystem, populations, communities, the flows of energy, material cycles, and the necessity of diversity. Concepts including the unity of organisms and inseparable interactions with the physical environment are analyzed. Class discussions include topics such as the formation, distribution, and organization of ecological communities; plant succession and nutrient cycling; evolutionary trends of plant and animal populations; and species interactions in subalpine and alpine forests, prairies, and plains.

EPM 4120 Introduction to Natural Resource Management (4 Credits)
This course provides an introduction to natural resource management with an overview of historic and contemporary management systems and principles. Students examine key policies, guidelines, and planning procedures of governmental agencies, resource-based industry and the public. Topics include the simultaneous consideration of biological, physical, social, and economic aspects of lands, waters, and natural resources to achieve sustainable conditions. Other topics are multiple use/sustained yield management; soil and water conservation and protection; use, restoration, and preservation of renewable and non-renewable resources; and the preservation and management of natural resources for recreation, spiritual renewal, and other amenity values.

EPM 4140 NEPA (4 Credits)
Students examine the requirements and implementation strategies of the National Environmental Policy Act. The Council on Environmental Quality, National Environmental Policy Act Regulations and the rules and requirements of various federal agencies which are responsible for National Environmental Policy Act implementation are examined in detail. Specific applications of National Environmental Policy Act to private and public activities which constitute major federal actions significantly affecting the quality of the human environment are discussed. Representative Environmental Impact Statements and Environmental Assessments are presented and critiqued for regulatory compliance and thoroughness in disclosing environmental effects of proposed actions. Prerequisite: EPM 4200 (Environmental Protection Law).
EPM 4150 Global Environmental Law and Policy (4 Credits)
This course explores the legal and philosophical underpinnings of the environmental movement, both in the United States and internationally. Students will analyze global environmental issues including endangered species, overpopulation, resource depletion, biodiversity, ocean dumping, deforestation, desertification, global warming, and ozone depletion. Emphasis is placed on management options and the use of international laws and treaties to mitigate, lessen, or eliminate damage to various aspects of the environment.

EPM 4200 Environmental Protection Law (4 Credits)
This course reviews a wide spectrum of laws which protect our environment and health. Students will discuss the purpose, context and implications of the most important laws, regulations and court cases that affect the quality of our lives. Coverage includes: National Environmental Policy Act (NEPA), Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), Occupational Safety and Health Act (OSHA), and related toxics laws. It provides an overview of the legal system and the roles of Congress, the President, executive agencies, states, and courts in shaping environmental laws.

EPM 4220 Endangered Species and Wildlife (4 Credits)
This course provides an overview of the basic principles, trends, challenges, and controversies of the administration of maintaining certain wildlife species. Threats from water and air pollution, poaching and other illegal actions, interrelationships of wildlife and their habitats, and biodiversity will be discussed. Students gain an understanding of the roles and responsibilities of various federal, state and local agencies, environmental and wildlife interest groups, and other organizations involved in wildlife management issues.

EPM 4230 Energy Fundamentals (4 Credits)
This course provides a well-rounded primer on energy as a resource and its importance in the economy and the world today. Renewable energy and alternative fuels as well as nuclear and hydrogen-based technologies will be explored. This course also provides an in-depth view of issues surrounding the development, enforcement and application of energy regulatory policy.

EPM 4232 Sustainability: Policy and Practice (4 Credits)
In 1987 the Brundtland Commission, formerly the World Commission on Environment and Development, defined sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The wording suggests the concept of sustainability is difficult to define. Certainly it relates to some of the most challenging questions of our times: How do we encourage consumption patterns to ensure a continuing resource supply for future generations? How can an individual enterprise, whether it is a major corporation or a mom-and-pop business, practice sustainability? How do well-meaning executives, scientists, engineers and policymakers achieve a balance between environmental protection and economic development?

EPM 4233 Sustainable Transportation (4 Credits)
21st Century transportation planning on the local and global scale involves consideration of environmental policies and sustainable practices. Development of an efficient system for moving goods and people along highways, airways and public transit networks must coordinate with legal requirements governing automobile source emissions, water pollution, mitigation of congestion, and crisis management. Conflicts occur along political fault lines between public interest groups, environmental justice advocates, the business community, government regulators, and the ordinary commuter. Consideration is given to different fuel sources, including carbon-based, hydrogen, electricity, and biofuels. The course also examines fuel efficiency (CAFE) and trends in emission science and regulation.

EPM 4234 Climate Change and Science (4 Credits)
Global Warming* is a cause celebre, but how much do we really know about the science involved in studying the earth’s climate? Moving beyond the social and political opinions espoused in the current debate on climate change, this course delves into the chemical and physical forces at play in the arena. This course covers scientific processes used in measuring climate dynamics, among them ozone chemistry, carbon and oxygen cycles, and heat and water budgets. It explores scales and methods for detecting climate change, including analyzing ice cores, instrumental records, and time series. Some attention will be dedicated to “climate forcing” caused by such things as orbital variations, volcanism, plate tectonics, and solar variability.

EPM 4235 Green Building (4 Credits)
Builders, developers and designers increasingly are promoting the use of green construction practices in the pursuit of healthier, smarter buildings. Students in this course examine sustainable building strategies and tools, including LEED (Leadership in Energy and Environmental Design), the nationally-accepted benchmark for the design, construction and operation of high-performance green buildings. LEED promotes a whole-building approach by recognizing performance in five areas: sustainable site development, water savings, energy efficiency, materials selection and indoor air quality. What materials are best in the design and operation of green building? How can a designer or building owner make better use of power and water efficiency programs? What are the recent developments, trends and case studies of green buildings and materials?

EPM 4236 Nuclear and Hydrogen Energy (4 Credits)
Two future- and high-tech oriented energy sources are explored in this course, nuclear power and hydrogen fuel. The course covers principles used in fission energy and in nuclear power engineering, including controlled chain reactions and reactor design criteria. It also attends to issues of radioactive waste treatment and storage and the mitigation of other radiation hazards. Currently, some 20% of the United States electric power comes from nuclear plants that use low-enriched uranium as fuel, burn nothing, and emit virtually no CO2. What is the future for this form of energy? In addition to nuclear power technology, the course focuses on fuel cells and the hydrogen economy, which brings its own questions concerning cost-benefit analysis and risks. Do these new economy, relatively “clean” energies present a way to avoid the downward trend of depleting natural resources, or do they send a siren song with the waste and safety problems they present?
EPM 4237 Renewable Energy (4 Credits)
Renewable energy sources now generate an estimated 13 percent of power worldwide. A political hot button, renewable energy sources range in their effectiveness, with some technologies already mature and economically viable, while still others need additional development or government subsidies to survive. The course begins with an overview of the major alternative sources, examining each one in-depth to consider its benefits, as well as its environmental and economic risks. We cover thermal systems and photovoltaics in the generation of solar power; atmospheric science and weather in the study of wind power; the organic chemistry that is involved in biomass, biofuels and agricultural residues; direct use of hot water in geothermal systems; and other alternative sources such as tidal and wave energy. Problems vexing grid placement and dissemination throughout a source network is also studied.

EPM 4238 Water and Food Sustainability (4 Credits)
For such basic human needs, water and food present their own highly-technical challenges inside legal, political and environmental spheres. This course delves into environmental, economic, and social implications in water usage and water resources regulation. This course also takes a broad look at food and farming systems at community, society, and ecosystem levels.

EPM 4280 RCRA Permitting and Compliance (4 Credits)
This course presents Resource Conservation and Recovery Act's cradle-to-grave regulations governing solid and hazardous waste generation and disposal, the various permitting requirements, and the process by which permits are obtained. Design and performance requirements for treatment, storage, and disposal facilities are examined. Developing trends in waste minimization, solid waste management, and special waste controls are also examined.

EPM 4355 ISO 14001 Standards (4 Credits)
This advanced course introduces the new ISO 14001 standard for environmental management systems. It includes a history and developmental context review of the ISO 14001 standard. This class reviews the specific elements and processes that form certifiable 14001 environmental management systems. Using an example, students develop a complete program that integrates the 14001 requirements with the existing strategic management methods of an organization. This program demonstrates how to use the 14001 framework as a proactive and systematic approach to environmental management. Class discussions include developing an environmental policy, specifying objectives and targets, implementing an environmental management program, monitoring and measuring program results, and reviewing the program to ensure continual improvement.

EPM 4390 Environmental Policy Analysis (4 Credits)
This course provides a basic introduction to the field of public environmental policy analysis. Specifically, it serves as a foundation course that introduces contemporary methods of policy analysis, agenda-setting, models of policy formulation and implementation, and policy evaluation. The focus is principally on concepts, analytical approaches, and research methods.

EPM 4400 Environmental Values and Ethics (4 Credits)
Students examine ethical considerations in environmental management and decision making. Discussions cover personal versus organizational attitudes; cultural, economic, and historic values; science versus politics; and international and intergenerational policies. The course also explores various philosophies of humankind's relationship with the environment. Students are encouraged to develop and express a personal philosophy relative to their role in the regulatory, technical, scientific, and financial management of the environment.

EPM 4460 Land And Visual Resources (4 Credits)
This course is designed to provide students from a broad range of disciplines with the skills to carry out applied research tasks and projects requiring the integration of geographic information system technologies and geospatial data. Students are introduced to a collection of techniques and data sources with a focus on acquiring and integrating data. Legal, ethical, and institutional problems related to data acquisition for geospatial information systems is also be discussed.

EPM 4461 Assessment of Social Impacts (4 Credits)
Students examine how the introduction of nuclear power systems or a nuclear waste treatment facilities affect the demographic and economic characteristics of a specific region. Basic analysis of archaeological resources, historic buildings and structures, and traditional cultural properties are also considered. Pertinent areas of environmental law provides guidelines and regulations with relation to the nuclear industry and current policy issues including the importance of the Energy Policy Act of 2005.

EPM 4462 Ecology, Soil, and Water (4 Credits)
A general overview of the potential effects of nuclear power facilities on ecosystems and ecological resources. These include terrestrial resources, wetlands, floodplains, aquatic resources, protected and sensitive species, geology, soil mechanics and seepage. In site-specific scales, the following items need to be considered, such as physical alteration of the landscape, disruption of natural processes, such as flooding and fires, and pollution.

EPM 4463 Air Quality, Noise and Transportation (4 Credits)
Air quality, noise and transportation issues can potentially be affected in the area surrounding a nuclear power plant in a variety of ways. Students become acquainted with the methodology of the dose rate estimations to the public and workers; the methods that are in place to monitor and reduce the risk to the public and workers from all hazards; and various pathways of exposure from possible nuclear contaminants and related pollution. Perceptions of citizens as stakeholders are considered. Identifying and profiling atmospheric toxic sources, developing and assessing emerging measurement methods, characterizing the degree and extent of local air toxicity problems, and tracking progress of air toxin reduction efforts. The impact of transportation on human and environmental risk assessment, including the primary methods and routes used to transport to a specific site, affected employees, commercial shipments, hazardous and radioactive material shipments, transportation packaging, transportation accidents, and onsite and offsite traffic volumes.
EPM 4464 Nuclear Power Plant Systems (4 Credits)
This course presents the basic components of nuclear power plant systems, their functional purpose, and operating conditions, including an overview of the equipments design and components from the safety point of view. An overview of nuclear power plants is presented in context of their impact on the environment and human health, including active and passive safety aspects.

EPM 4465 Environmental Restoration and Waste Management (4 Credits)
Environmental Restoration is the identification and elimination of hazardous materials from a designated site such that the risks to human health and the environment are reduced to an acceptable level for an intended future land use. This course examines successful environmental restoration activities that were used to reduce and mitigate risk associated with past operations of nuclear and nuclear-related facilities and the significant potential to release harmful contaminants. Environmental restoration effects on the ecological and human health risk assessments and analyses related to the transport, treatment, storage, and disposal of waste from the contaminated site are presented. Remediation processes for radioactive materials and other hazardous wastes and the eventual storage, processing, and disposal and the potential effect on humans and the environment is studied. An overview is given on the development of a radiological protection program for an EIS report. External and internal hazards: control measures and monitoring, and other important limits and measurements are explored.

EPM 4500 Leadership for Environmental Managers (4 Credits)
This course is an overview of basic leadership and management skills with an emphasis on topics germane to practicing environmental professionals. It addresses three main subject areas: performance metrics and standard financial reports (i.e., how organizations and businesses keep score); leadership (i.e., changes in behavior and work habits necessary for advancement from staff to management; and achieving clarity in organizational values and mission); and basic elements of internal and external communications. The class will make use of reading assignments, written assignments and class participation.

EPM 4510 Environmental, Health & Safety (4 Credits)
Students are given an overview of the statutory and regulatory origins of environmental health and safety compliance management. The exponential growth in regulations and the increased demand to streamline resources present a unique opportunity for the environmental professional to integrate safety and health regulations both horizontally and vertically within the organization. Students learn to evaluate the benefits and barriers to integration of environmental health and safety. Topics to be discussed include fundamentals of safety management, training requirements, emergency planning, setting goals, objectives, and operating procedures, and how management views environmental health and safety.

EPM 4520 OSHA Law (4 Credits)
This course provides an in-depth review of the laws and regulations that govern the safety and health of workers. The course is of value to students seeking to expand knowledge of the Occupational Safety and Health Act. Emphasis is on the areas of overlap between safety and environmental laws, OSHA’s inspection and enforcement authority, employee and employer rights, record keeping requirements and an outline of labor’s interest in OSHA cases. Current topics such as OSHA reform legislation and regulatory agenda are discussed.

EPM 4525 Workplace Safety Management (4 Credits)
This course examines Occupational Safety and Health Administration rules governing work place safety and other applicable industry standards, like those of the American National Standards Institute and National Fire Protection Association. Students learn how to develop and apply compliance programs, how to reduce losses of direct and indirect costs due to accidents, and how to convince management and employees that safety programs are beneficial. Important programs and topics include development of costs of accidents, investigation programs, practical application of worker’s compensation, confined space entry programs, injury/illness records and reporting, programs for new fall protective rules, personal protective equipment programs, and actions to develop financial and management support.

EPM 4701 Topics in EPM (2-5 Credits)
The content of this course will vary each time it is offered. The topics may include time-sensitive issues in the field of environmental policy and management, elective courses that are not scheduled regularly during the course of the year, or advanced inquiry into core-course subjects. Each time the course is offered, the specific content will be announced in the quarterly course schedule. Depending on the subject matter, students may be required to have completed prerequisite courses.

EPM 4705 Land Use Planning (4 Credits)
This course includes a comprehensive examination of the land use planning efforts of federal, state, and local governments. The legal authorities, responsibilities, and conflicts of these governmental entities are examined in detail. Class discussions include: setting goals and objectives for specific components of ecosystems; design of projects to achieve desired ecologic conditions; the interrelationship between home rule authority, local zoning and planning requirements, and federal/state natural resource plans; use of new technologies in planning; and public participation in land use plans.

EPM 4710 Environmental Project Management (4 Credits)
Students discuss environmental project management from the government, industry, and contractor perspectives. The course looks at successful project management organization, planning, and communication strategies. Using examples, students will also examine complex projects needing management. The types of contractual assistance needed will be reviewed.

EPM 4780 Air, Water and Soil Pollution (4 Credits)
This course addresses sources, reactions, and remediation of pollutants occurring in the atmosphere, waters, and soil. The deposition of pollutants from the atmosphere to soil and surface waters (acid rain) is covered. The migration of pollutants from surface waters through the soil to ground waters are also discussed.
EPM 4901 Capstone Project (4 Credits)
The Capstone Project provides students the opportunity to research a topic, problem, or issue within their field of study, and work individually with a Capstone advisor. Similar in weight to a thesis, but more flexible, this final project synthesizes and applies core concepts acquired from the program. The student selects an appropriate Capstone advisor who is knowledgeable in the field of study to work closely with and whom can guide the research project. Evaluation will be focused on the quality and professionalism of applied research and writing; critical and creative thinking; problem-solving skills; knowledge of research design, method, and implementation; and contribution to the field and topic of study. View the Capstone Guidelines for additional details. Prerequisites: a capstone proposal that has been approved by both the capstone advisor and academic director, unconditional acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better, and a “B” or better in one of the following courses: MALS 4020, COMM 4905, GS 4905, MALS 4905, EPM 4910, HCL 4910, HRA 4910, ORL 4910, ORL 4910, SMGT 4910, ICT 4000, or MALS 4915.

EPM 4902 Capstone Seminar (4 Credits)
The Capstone Seminar is a graduate seminar in which students utilize the knowledge and skills gained through the degree program to create a culminating work that critically addresses a problem or issue in the degree field of study. The student produces a paper of 7000-8000 words that presents a position on a relevant problem or issue, supports the position with professional and academic work in the field, analyzes and tests the paper position, and discusses the role of the findings within the field of study. The seminar is dependent upon collegial discussion of student research and work under the facilitation of a faculty member, and it is governed by the quality of participation and contributions of the students. The course structure, facilitated by the faculty member, guides the students through the process of independent research and writing of a capstone paper; the instructor provides intensive feedback on the capstone process and papers. Students are responsible for generating the course content through ongoing discussion of and peer feedback on the capstone process and individual papers, as well as the analysis and contextualization of focused students papers within the wider degree field of study. Students professionally and academically communicate their findings through written work and oral presentations. Students must have: Unconditional acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better, and a “B” or better in one of the following courses: MALS 4020, COMM 4905, GS 4905, MALS 4905, ORL 4905, EPM 4910, HCL 4910, HRA 4910, ORL 4910, SMGT 4910, ICT 4000, or MALS 4915. A final grade of “B” or better is required in this course to meet degree requirements. Students must complete the Capstone Seminar in one quarter; no incomplete grades are assigned.

EPM 4904 Interdisciplinary Capstone Seminar (4 Credits)
The Interdisciplinary Capstone Seminar is a graduate seminar in which students utilize the knowledge and skills gained through the degree program to create a culminating work that critically addresses a problem or issue in the degree field of study. Members of the class will include students from various UCOL programs, representing multiple topics of study. On campus offerings of this course include required online components. The student produces a paper of 7000-8000 words that presents a position on a relevant problem or issue, supports the position with professional and academic work in the field, analyzes and tests the paper position, and discusses the role of the findings within the field of study. Students professionally and academically communicate their findings through written work and oral presentations. The seminar is dependent upon active and collegial discussion and critique of student research and work under the facilitation of a faculty member, and it is governed by the quality of participation and contributions of the students. Students must have: Unconditional acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better, and a “B” or better in one of the following courses: MALS 4020, COMM 4905, GS 4905, MALS 4905, ORL 4905, EPM 4910, HCL 4910, HRA 4910, ORL 4910, SMGT 4910, ICT 4000, or MALS 4915. A final grade of “B” or better is required in this course to meet degree requirements. Students must complete the Capstone Seminar in one quarter; no incomplete grades are assigned.

EPM 4910 Research Practices and Applications (4 Credits)
This course develops competency in principles of research and measurement for use in the professional setting. As an initial course in the program of study, students learn research methods to apply to program and systems design and evaluation to achieve successful measurement of outcomes and goals. Students become critical consumers of pertinent literature to provide background and support for the choice and application of proper qualitative and quantitative research methods and data analysis for professional application. Critical thinking through comparing and contrasting cause and effect is used to build logic models. Research, design, and evaluation processes that address issues of implementation, feasibility, and sustainability are emphasized. At the conclusion of this course, students are prepared to apply and clearly communicate the practice of scientific research principles in the professional environment to ensure that the question being asked can be answered through rigorous research and the design and formative assessment of the program or system. Completion of Institutional Review Board (IRB) training via CITI Program is required as a basis for discussion of research ethics and IRB procedures. Competencies gained in this course, including practices of inquiry, self-analysis, and evaluation, are applied and integrated throughout the course of study and demonstrated in the culminating capstone work of the master’s degree.

EPM 4980 Internship (1-4 Credits)
The Internship is designed to offer students a purposeful experience in the field of environmental policy and management. The internship is an individualized learning experience and a training plan is created for each student in conjunction with the internship site to provide experiences related to the skills and knowledge covered in the certificate and master’s programs.

EPM 4991 Independent Study (1-8 Credits)
This is an advanced course for students wishing to pursue an independent course of study. The student must be accepted in a degree program, have earned a grade point average of 3.0 or better, obtained the approval of the department director, and have completed the Independent Study form and filed it with all appropriate offices before registering for the independent study. Independent Study is offered only on a for-credit basis.

EPM 4992 Directed Study (1-10 Credits)
This is an advanced course for students wishing to pursue a directed course of study. The student must be accepted in a degree program, have earned a grade point average of 3.0 or better, obtained the approval of the department director, and have completed the Independent Study form and filed the form with all appropriate offices before registering for the independent study. Directed Study is offered only on a for-credit basis.