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**2014 - 2015 MES Elective Course Descriptions**

*(Courses are offered on Monday or Wednesday nights, 6-10p. Please see* [*http://www.evergreen.edu/catalog/2014-15/mes*](http://www.evergreen.edu/catalog/2014-15/mes) *for complete information).*

**Fall 2014**

***Advanced GIS – Mike Ruth, Environmental Systems Research Institute, Inc. (Esri)***

This fast-paced course will teach you how to use Geographic Information Systems (GIS) for mapping, spatial data management, and spatial data analysis. Instruction is based on reading assignments, lectures, and weekly hands-on labs using ArcGIS 10.1, including both desktop and online mapping tools for collaboration and presentation. Evaluations are based on the quality of student-produced map and analysis products and two quizzes. No previous experience with GIS is required, but students should be familiar with quantitative software and MS Windows file management practices.

***Conserving and Restoring Biodiversity – Timothy Quinn, Washington Department of Fish and Wildlife***

This course focuses on the biology that underlies conservation and restoration issues around the world. This course will introduce you to the literature, controversies, and promising methodologies for a variety of conservation/restoration biology applications. In addition, I will invite a number of local experts to come and provide perspectives on their work in applied fields of conservation. We will read, discuss, and write on a variety of topics. Your assignments include written and oral exercises, and peer evaluations aimed at helping you develop your ideas and increase your ability to communicate those ideas. I want to introduce you to the principal concepts and methodologies of conservation and restoration biology, enrich your understanding of the scientific contributions necessary for solving conservation problems, foster your understanding of the scientific process in general and as applied in conservation settings, and further your powers of analysis and ability to communicate effectively.

***Cost-Benefit Analysis and the Environment – Peter Dorman, MES Faculty***

Major regulations and public projects now require cost-benefit analysis.  This program takes a close look the methodology of Cost-Benefit Analyses (CBAs), with an emphasis on controversial topics that arise in environmental applications. Should monetary values for life, health and ecosystem services be calculated and weighed against the monetary costs of environmental and health regulations?  Should impacts expected to be felt by future generations be discounted to much lower present values today?  How should uncertainty and complexity be incorporated into projected costs and benefits?  These and other questions will be addressed theoretically and through the use of case studies, with a particular focus on the costs and benefits of actions to combat climate change.

***Sustainable Forestry: A Study in Natural Resource Management – Richard Bigley, WA Dept. of Natural Resources***

This course is a lecture and field-based introduction to forests of the Pacific Northwest, the science of forests and associated aquatic habitat management and the forces of change on their management. Case studies from forest, wildlife and fisheries management will examine 1) how society catalyzed, and forest science has fueled, recent developments towards a sustainable forestry; 2) the role of habitat restoration in sustainability of both forests and fisheries; and 3) insights into the future of ecosystem-based management. Weekend field trips will provide a view into the front line of natural resources management science and policy. The course will provide an introduction to analysis skills to help evaluate policies and strategies for management, restoration and protection of forests and the services they provide.

**Winter 2015**

***Environmental Rhetoric and Communication – Kevin Francis, MES Director***

Professionals in every environmental discipline must communicate with diverse audiences in clear and persuasive prose. In this course, we will study key examples of argumentative writing in the environmental movement and examine the rhetorical strategies that make them effective forms of communication. Students will also develop their own capacity to communicate with various audiences through assignments focusing on contemporary environmental issues.

***From Electrons to Renewable Energy Credits: An Introduction to Electricity and Electricity Policy – Kathleen Saul, MES Faculty***

Electricity generation contributes about one-third of the annual greenhouse gas emissions in the United States. Even though most states have passed renewable energy legislation, the country has no national standard for renewable resources in this important contributor to daily life and the economy.  This course will introduce students to the basic concepts of electrical generation and the history of the electrical industry in the U.S. The course will also examine the major pieces of energy and environmental policy at the national level that have impacted the electrical industry and set the stage for a renewable energy future. Finally, the course will look at policies in the state of Washington. Students will come away from the class with a deeper understanding of the challenges of moving from the current centralized, grid-tied, interconnected electrical system to a more renewably sourced, decentralized one.

***Restoration Ecology – Sarah Hamman, Center for Natural Lands Management***

This course will explore both the objective and the subjective facets of restoration ecology, including various cultural perspectives on the value of restoration, how economic and political realities influence restoration targets, and the integrated structural and functional components of ecosystems that contribute to the success or failure of any restoration project. Students will have the opportunity to evaluate several large-scale restoration projects throughout the world and take part in active ecological restoration locally.

***Water Management for Human and Environmental Systems – Paul Pickett, Washington Department of Ecology***

This class will explore how we manage water to meet the often conflicting needs of human society and of the freshwater ecosystems upon which we value and rely. A key organizing principal of the class will be Integrated Water Resources Management, which is a tool for sustainable water management. In this course, we will review the science of water, and then explore how human communities interact with watersheds and the water environment. The course will conclude by comparing how water management differs globally between rich and poor nations, and look ahead to the emerging challenges of climate change. Students will apply class concepts by researching individual case studies, which they will present in a technical paper and class presentation.

***Wildlife Conservation and Policy – Dina Roberts, MES Faculty***

This elective will focus on the science and implementation behind conservation biology’s goals of slowing, stopping, and reversing wildlife population declines.  Topics will include global, national, and state strategies to categorize, prioritize and protect threatened and endangered species from across the taxonomic spectrum.  Invited guest speakers will provide insight on the practical challenges of wildlife conservation. The program will explore the connections and disconnections between wildlife science and policy.  Readings from current nonfiction writings and peer-reviewed papers will review a wide range of conservation biology topics merging population ecology, genetics, conservation planning, and policy to explore a modern and interdisciplinary approach to protecting species, habitats and ecosystem services in a rapidly changing world.

**Spring 2015**

***Aquatic Ecology – Erin Martin, MES Faculty***

Inland waters (lakes, rivers, streams, reservoirs, wetlands and groundwater) are some of the most threatened ecosystems on Earth, yet they provide critical ecosystem services. This course will examine inland waters as ecological systems that interact with their drainage basin and the atmosphere. It also explores how physical, chemical, and biological processes operate and impact the organisms found in each ecosystem. Finally, we will study the way inland waters, as hotspots of biogeochemical activity, contribute to fluxes of greenhouse gasses. This program will include lectures, laboratories, and at least one field trip to gain hands-on experience with aquatic ecology sampling techniques.

***Climate Justice – Shangrila Wynn, MES Faculty***

'Climate justice’ has become the dominant discourse among civil society groups that have mobilized around and beyond UN climate talks over the last decade. But what exactly does it mean, and what are its implications for ongoing climate negotiations and policy-making? This course will introduce students to the debates within academic, activist and policy circles around the complex and multifaceted idea of climate justice. We will take an interdisciplinary approach that draws upon political ecology, critical geopolitics, political philosophy and sociology. In addition to the academic literature, we will explore the ways in which this idea is put into practice by civil society groups around the world through local and international case studies of climate justice activism. We will also examine current international climate negotiations and the role played by the climate justice discourse in these contentious negotiations.

***The Value of Natural Capital: Theory, Practice, and Policy* – *Scott Morgan, Sustainability Director, Evergreen & Lola Flores, Earth Economics***This course will focus primarily on using Ecosystem Service Valuation (ESV) in informing decision makers of alternative approaches to many widespread environmental issues. This class is a facilitated learning experience using Evergreen’s Olympia campus as an applied case study to learn the theory, methodologies, and practice of ecosystems services and accounting for natural capital along with their applications in public policy. The students will apply lessons learned in class by scoping and building the foundations of a complete economic assessment of Evergreen’s campus during the course. Guest lecturers from Earth Economics will work closely with the class to develop a deep understanding of this innovative economic perspective that provides a critical connection between standard cost/benefit analyses and the unaccounted impacts upon our environment.

***Introduction to GIS – Mike Ruth, Environmental Systems Research Institute, Inc. (Esri)***

This course will teach students how to use the versatile technology of Geographic Information Systems (GIS). GIS technology is increasingly used by physical and social scientists, policy makers, businesses, environmental and conservation organizations, utilities, public health providers, the military, and educators, to name a few. Instruction will rely strongly on weekly hands-on labs and homework exercises to guide students through a public policy decision process from beginning to end over the duration of the quarter.  Students will learn to manage spatial data and tools, mainly using the **[Esri suite of software](http://www.esri.com/)** commonly known as ArcGIS. No previous experience with GIS is required.  Student versions of the ArcGIS software suite will be made available for home use (but technical support is limited to college computers).