**Master of Environmental Studies Electives (Fall 2017)**

*See evergreen.edu/mes for a full description of each course*

**Advanced GIS (Mike Ruth)**

Advanced GIS is a fast-paced course designed to teach graduate students 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. Students should have experience with quantitative software and must be able to demonstrate a solid understanding of MS Windows file management practices. Students will be expected to use the Esri software suite outside of class, for performing hands-on mapping assignments.  Student versions of the ArcGIS software will be made available, but support is limited to college computers (note: ArcGIS Desktop software runs only under MS Windows, see requirements: [**http://resources.arcgis.com/en/help/system-requirements/10.1**](http://resources.arcgis.com/en/help/system-requirements/10.1/)).

*Prerequisites*

Students will have completed MES's Introduction to GIS or be able to show significant experience using ArcMap for Desktop software in either professional or academic settings. Students who have not completed Introduction to GIS should email a brief description of their previous experience with GIS to the MES Director (Kevin Francis,**[francisk@evergreen.edu](mailto:francisk@evergreen.edu)**) and Faculty (Mike Ruth, [**ruthm@evergreen.edu**](mailto:ruthm@evergreen.edu)). Registration priority will be given to students who have taken Research Design and Quantitative Methods. To register, you must email the MES Director for approval (Kevin Francis,**[francisk@evergreen.edu](mailto:francisk@evergreen.edu)**).

**Conserving and Restoring Biodiversity (Tim Quinn)**

This course focuses on the biology that underlies conservation and restoration issues around the world. There are many ways to approach the study of conservation and restoration biology and this course will mostly emphasize the scientific elements of these disciplines. The course will also will provide you with a practitioner's perspective of the relationship between biology and policy from work done in Washington State. This course will introduce students to the literature, controversies, and promising methodologies for a variety of conservation/restoration biology applications. In addition, a number of local experts will come in and provide perspectives on their work in applied fields of conservation. We will read, discuss, and write on various conservation topics. Course assignments will include written and oral exercises with peer evaluations to help students develop ideas and improve communication skills. This course will introduce students to the principal concepts and methodologies of conservation and restoration biology, enrich their understanding of the scientific contributions necessary for solving conservation problems, and further their powers of analysis and communication.

**Food and Agricultural Policy (T.J. Johnson)**

The modern industrial food system has dramatically increased agricultural productivity, reduced the cost of food production, and provided an almost unlimited range of consumer choices. The corporations and organizations that control this system are some of the wealthiest and most politically powerful forces on the planet. Despite this success, the environmental, social, and economic consequences of the system have led many to question its long-term sustainability. This class will examine the origins of the modern industrial food system and the economic and policy framework that supports it, both internationally and in the United States.  Through readings, lectures, films, discussions, written assignments, and a day-long field trip, we will consider both the costs and benefits of the current system as well as potential alternatives and strategies for change. Students will also complete an individual research project examining their own relationship with the food system and the forces and policies that shape their choices as consumers and citizens.

**Probing the “How” and the “Why”: An Introduction to Qualitative Research Methods (Kathleen Saul)**

Quantitative methods of research typically focus on answering questions about the extent or significance of relationships between variables. In contrast, qualitative research seeks to answer questions that usually start with "Why. . . " and "How . . ." through nuanced descriptions and explanations. This elective introduces students to both the theory and methodology associated with diverse kinds of qualitative research. Students will explore the social construction of reality, what it means to participate in "self-full" research, phenomenology, and grounded theory through reading and seminar discussions. Students will also examine environmental studies that use observational research, archival searches, case studies, interviews, focus groups, and surveys. Finally, students will develop skills on specific tools for data analysis and interpretation, including the use of Atlas.ti for coding. Students can expect to complete exercises throughout the quarter that help them discover key features and techniques of qualitative research. This course provides a strong conceptual and practical foundation for students who want to employ qualitative methods in their thesis or subsequent research.

**Public Land Management and Climate Change (Peter Goldmark)**

Our public lands are a resource far beyond monetary value. Washington’s forested and shrub steppe landscapes represent a vulnerable and irreplaceable natural resource that fosters vital wildlife habitat, forage, clean water, oxygen regeneration, carbon storage, fiber and building materials, recreational opportunities, personal solace and much more. In the first phase of this class, we will look at the complex management plans currently deployed on state, federal, and tribal lands across Washington State. Students will also engage directly with a diverse spectrum of land managers in both field and classroom settings. Course work will include analyzing research papers and land plans that detail many of the current strategies managers use. A mid-term paper summarizing these various and sometimes contrasting management methods will be required. The second phase of the course will focus on climate change and the threat this presents to all public lands and, thus, the imperative of adaptive strategies. Students will consider a range of climate models and consensus predictions presented by climatologists. We will also focus on innovative management strategies that will enhance the resilience of public forests and rangelands to mitigate warmer temperatures and more frequent natural disturbances. Visiting experts from Native American tribes and federal and state agencies will lead discussions on potential approaches to the enormous threat that climate change presents. We will examine and debate management strategies to increase resilience of forests and rangelands, improve carbon storage, enhance water retention of landscapes, and dramatically increase the fire resistance of embedded communities. A final paper and oral argument on each student’s suggested potential adaptation plans for public lands will be required. There will be a minimum of 4 field trips, including meetings with scientists and senior agency staff in the field.