

## MES Fall Quarter 2009

**First-year core:** *Political Economic and Ecological Processes* – Frederica Bowcutt & Martha Henderson  
Tuesdays & Thursdays 6-10 pm

**Focus:** This program provides a framework for understanding current Pacific Northwest environmental issues from an interdisciplinary perspective. Students will begin to develop the skills to become producers of new knowledge, rather than being strictly consumers of preexisting information. Multiple methods of data acquisition and analysis will be introduced through examples drawn from many different disciplines. Students will study the relationship between economic and political systems with regard to the environment within the Pacific Northwest region. Students will also study the region's natural history and explore the relationship between science and policy with a special focus on environmental history and ecological restoration. Field trips will provide opportunities to visit local ecosystems.

**Second-year core:** *Case Studies and Thesis Research Design* – Ralph Murphy & John Perkins  
Tuesdays & Thursdays 6-10 pm

Students will examine selected research projects on a variety of environmental problems. The aim is to understand how research is conceived, planned, and executed. This program will draw upon the skills gained in the first year of MES core studies. Students will work to apply their knowledge and skills to the design of their individual thesis research plans. At the end, each student will have a polished draft of their Thesis Prospectus, ready for refinement in consultation with the student's thesis advisor.

## Electives:

***The Ecology of Harmful Algal Blooms*** – Gerardo Chin-Leo

Wednesdays 6-10 pm, possibly one Saturday field trip

**Focus:** Microalgae account for most of the plant biomass and production in aquatic systems. Recently, coastal waters worldwide have experienced an apparent increase in the occurrence of large concentrations (blooms) of harmful algal species. Blooms of toxic algal species (e.g. red tides) can cause direct mortality of fish and shellfish. Other organisms, including humans, can be indirectly affected through the consumption of contaminated seafood. Large blooms of non-toxic species can also have negative impacts on aquatic habitats by shading benthic plants and by interfering with the activities of other organisms. Furthermore, if these algal blooms are not grazed or diluted, their decomposition can deplete the dissolved oxygen in the water causing the mortality of plants and animals. This program will study the taxonomy and ecology of harmful algal species, the environmental factors controlling the abundance and productivity of aquatic algae, and the possible role of human activities in causing the increase of harmful algal blooms. In addition, we will examine the efforts to monitor harmful algal blooms, and to control their impact on fisheries and public health.

***Energy in the Pacific Northwest: A Model for the Future?*** – Kathleen Saul

Mondays 6-10 pm

**Focus:** This survey course will examine energy in the Pacific Northwest, past, present, and possible future, through the eyes of professionals and practitioners in various energy fields. After a brief introduction to the basics of energy—the vocabulary, the units of measurement, and how energy is produced and distributed—the class will explore the different energy options now being employed in the Northwest utilities as well as some still under investigation. The class will mix weekly readings and seminar with guest lectures and a final position paper to help students better understand the exciting diversity of energy issues facing the Pacific Northwest.

***GIS and Spatial Analysis*** – Greg Stewart

Wednesdays 6-10 pm

**Focus:** This is an introductory course to GIS. We will focus on the structure of and analysis of spatial data, using GIS as a tool to conduct spatial analysis. Students will learn the basics behind GIS through lecture and labs. The class will be primarily hands on, with a lab every week, on-line course work, and a final spatial analysis project. Student will be given a reduced version copy of ArcGIS to carry out work at home, and time will be available in the CAL for class and group work. Students will work in groups for the spatial analysis project, and it will entail accessing and analyzing spatial data at an advanced level, and presenting findings to the class. Students should be capable in Windows file management.