

SYLLABUS - DRAFT
MES Freshwater Ecology, Winter 2012
<http://www.evergreen.edu/mes>

MASTER OF ENVIRONMENTAL STUDIES
THE EVERGREEN STATE COLLEGE
Mondays 6-10 pm
Lecture: Lab I 1050

Faculty	Office	Telephone	Email	Office Hr(s)
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Description

In terms of providing habitat for threatened and endangered species, freshwater habitats rank as the most imperiled ecosystems on Earth. Historically and currently used for transportation, irrigation, energy production, waste disposal and recreation, it is important to understand how freshwater systems function and how we can work toward ecological restoration of freshwater habitat. This program will focus on the foundations of and research methods in freshwater ecology. Topics covered will include basic water chemistry, stream flow dynamics, primary productivity, aquatic insect ID, trophic dynamics, ecological interactions, organic matter and nutrient dynamics, current threats to freshwater ecosystems and ecological restoration. The course will focus on current research in ecosystem ecology, community ecology and ecological genetics in riparian zones, streams, rivers and lakes. Seminar readings will focus on human-freshwater interactions and current research in freshwater topics. Field trips will be undertaken regardless of weather conditions to local freshwater environments and the course will include several hands-on lab activities.

Required Readings

1. Allan, J.D. and M.M. Castillo. 2007. *Stream Ecology: Structure and Function of Running Waters*, 2nd Edition (Springer, ISBN: 978-1402055829).
2. Solomon, S. 2011. *Water: The Epic Struggle for Wealth, Power and Civilization*. (Harper-Perennial, ISBN: 978-0060548315).
3. Prud'homme, Alex. 2011. *The Ripple Effect: The Fate of Fresh Water in the Twenty-First Century*. (Scribner, ISBN: 1416535454).
4. OPTIONAL: Merritt, R.M., K.W. Cummins, and M.B. Berg. 2008. *An Introduction to the Aquatic Insects of North America*, 4th Edition. (Kendall-Hunt Publishing, ISBN: **978-0757563218**)

Students can purchase these books at the bookstore or order them online (but they must be in-hand for the first class period!). Additional readings, as assigned, will be posted on the moodle site.

Typical Class Schedule

Each 4-hour class session will typically (but not always) consist of the following activities:

- lecture (~90 min),
- seminar (~30 min),
- workshop (~90 min),

Typical Weekly Assignments

All students are expected to complete the assigned reading prior to class. Lectures will cover more material if students have read the assigned readings prior to class. In addition, the foundation of an effective seminar discussion is a group of participants who have read the material carefully and formulated some key questions and responses to the reading. Students will be asked to facilitate at least one seminar in a small group.

All students should prepare for seminar with a written response to the following two questions (1-3 sentences for each question) and submit these responses in their final portfolio.

1. Among the various claims the author(s) makes, state one with which you find especially compelling or flawed. Say how you might further support a compelling claim or counter a flawed claim.
2. Articulate 3 questions from the reading that you would like to discuss in seminar.

There will be a weekly "preparedness" quiz on Moodle available prior to 6pm lecture. This will provide students with weekly examples of the types of questions they might expect on midterm and final exams covering freshwater ecology readings and lecture materials. The midterm exam will occur on Monday of week 5 and the final exam will occur on Monday of week 10.

Term Research Assignment: "Rivers of Hope"

As a class we will chose a region of the U.S. (American West, Pacific Northwest, or North America in general). From this region, we will allow each student to choose a large river system to research. For each river system, we will describe it physically (drainage area, land use, hydrograph, parent material, etc.), biologically (dominant riparian vegetation, dominant fish species, productivity and seasonal patterns, endangered species presence, invasive species presence, etc.), and culturally (history of the river name, historical land ownership and land-use, traditional ecological knowledge, etc.). We will describe reported cases of environmental impacts, news stories on damaging conditions, and the current status of the river in 2013. Finally, we will write about restoration projects along the river, success stories and project future conditions. We will work to create maps of our drainages and one map that includes all rivers in the series. We will compile these profiles into an MES book titled, "Rivers of Hope."

All writing assignments should be:

- Word-processed, double-spaced, two-sided, 11 or 12 point font, 1" margins, spell-checked, and proof-read.
- In top right corner: Your name, date of submission
- Centered Paper Title
- Pages should be numbered (in Word, use Header/Footer feature).

Course Portfolio

Students will collect and organize all their work for this course as part of a course portfolio, which they will submit to their faculty during the 5th week of the quarter and at the last class meeting. We recommend getting a three-hole binder for this portfolio. I will provide a checklist for this portfolio prior to

week 5 and week 10 in order to help students maintain a complete and organized portfolio.

Evaluation

Students in the MES program are evaluated consistent with the college's evaluation procedure. Student work will be assessed on an on-going basis throughout the quarter. During the 5th week of the Fall Quarter, faculty will evaluate all student work and a 5th Week Warning Letter will be sent to students whose performance might result in credit loss. Assessment is based on completion of assigned work, quality of that work, attendance, participation and professionalism consistent with graduate work. During Evaluation Week, which follows the 10th week of the quarter, students must meet with their faculty. The faculty will assess the student's work and the Self-Evaluation that the portfolio. A written Faculty Evaluation of Student Achievement will be filed and credit awarded (or not).

Field trips

We will have two field/lab experiences in this course regardless of weather. Due to the early darkness, these field experiences will need to be on the weekends. These field trips will make up for class time missed due to two Monday holidays in winter quarter. Please have the following gear available for field trips:

Field notebook (small - rite-in-the-rain)
Waders or tall rubber boots
Field guides
Invertebrate guides
Markers, pencils
Rain gear
Day pack