BIOL/EVPP 350-201 Freshwater Ecosystems Lab

Instructors: **Dr. Kim de Mutsert,**
Assistant Professor, Environmental Science and Policy

This laboratory is a required and integral part of BIOL/EVPP 350. You will take the virtual experience of the lecture part of the course and learn how to apply it in the real world through collection of samples in the field, processing in the lab, culminating in analysis and reporting on results. Field collection trips to four different freshwater habitats (i.e., lakes, freshwater tidal, streams, and wetlands) are planned in September/October and may extend for slightly longer than the 4-hour scheduled period. Students should wear appropriate clothing depending on the lab activities for a given day. For example, when fieldwork is scheduled, students should wear clothing and shoes (e.g., old sneakers, water shoes, hiking sandals, or rubber boots) that can take exposure to hot sun, water, slime, and mud. For field trips, bring snacks, water, sunscreen and/or insect repellant, and rain gear, as appropriate. Lab work may also result in exposure to samples or test chemicals so please dress appropriately for all lab sessions (e.g., close-toed shoes and long pants at all times). During chemical analyses students will wear lab coats, gloves and goggles.

Students are expected to read and review assigned lab materials, as appropriate, before attending the laboratory session. The free lab manual can be found on the class Blackboard page. Homework assignments designed to assist students in data analysis and report writing will be due via Blackboard before lab on the dates indicated in the schedule below. Home work will be graded and incorporated into your final grade as indicated in the lab syllabus, report drafts will be graded and incorporated in your report grade. **Hand in materials on time.**

During field collection and lab sessions, students will participate in all aspects of the work. Freshwater samples collected and processed will include water, zooplankton, benthic organisms, soil, vegetative biomass, and fish. Students will process and analyze samples collected at each of the field sites, and will present a 20-minute group presentation in addition to writing a research paper based on one of the habitats. Students will be placed in groups (a lakes, freshwater tidal, streams, and wetland group) for lab processing of field samples and presentation of data/results, but each student must develop their own project report, working independently.

Your project report will be double-spaced, font size 11, a minimum of 10 pages and a maximum of 20 pages. The report should include a title, introduction, methods, results/discussion, conclusion and a references section. References should follow a standard format; look at the references in a journal of choice, and look up the instructions for authors of that journal (i.e. you can choose an existing format, but make sure to consistently stick to one format). The references section should include at least three peer-reviewed journal articles. You can use information from the lab manual for your report (and refer to the lab manual), however **copying and pasting from the lab manual is not acceptable**. Per lecture syllabus, GMU Honor Code is also in effect for lab.

Your first points of contact for lab-related questions should be the teaching assistants, Ms. Suzanne Dee and Ms. Amanda Sills, then your professor, Dr. Kim de Mutsert.

All lab days will meet at 11:30 in Exploratory Hall L502. On field days, we will depart from the lab to the field destination. If you "miss the bus" on field days, you will not be able to receive credit for work missed. **Please be on time!** Field day execution is dependent on weather (e.g., storms), so expect to adapt as needed. You are also welcome to bring a bag lunch with you to the field sites as long as you leave no trace (i.e., leave nothing behind) in the natural areas we visit.

If you are unable to attend a lab for health or other urgent reasons, please email both Suzanne Dee (sdee@masonlive.gmu.edu) and Amanda Sills (asills@masonlive.gmu.edu) as soon as feasible.

Week	Activity	More info
1-9/4	Trip to Burke Lake (rental boats)	**Field** collection of water, zooplankton and benthos
	Read in advance: Lab manual page 1-17	
2-9/11	Occoquan River, Mason Neck (Miss Rivershore)	**Field** collection water, zooplankton and benthos
	Read in advance: Lab manual page 9-17	
	Light Profile Homework Due	
3-9/18	Trip to local streams (Cub Run, Bull Run)	**Field** collection of water, macro invertebrates, and stream characteristics
	Read in advance: Lab manual page 18-19	
	Temperature and Oxygen Profile Homework Due	
4-9/25	Trip to GMU wetland	**Field** survey, collection of water, plants, and soil
	Read in advance: Lab manual page 20-21	
	Alkalinity and Conductivity Homework Due	
5-10/2	Trip to Noman Cole wastewater treatment plant	**Field Trip** learn and see wastewater treatment processes
	Draft Field Methods Due	
6-10/9	Lab processing (4 stations)	Chemistry, wetlands, zooplankton, benthos
	Read in advance: Lab manual page 22-48	
	Biotic Index Homework Due	
7-10/16	Lab processing (4 stations)	
	Read in advance: Lab manual page 49-60	Chemistry, wetlands, zooplankton, benthos
	Analyses and Graphing Homework Due	
8-10/23	Lab processing (4 stations)	Chemistry, wetlands, zooplankton, benthos
	Read in advance: Lab manual page 61-63	
	Draft Lab Methods Due	
9-10/30	Lab processing (4 stations)	Chemistry, wetlands, zooplankton, benthos
	Draft Introduction Due	
10-11/6	Lab processing, data analysis, tech writing	Wetlands, chlorophyll a, data analysis
	Draft data analysis description due	
11-11/13	Data analysis (student teams)	Data analysis and presentation prep
	Draft Results Due	
12-11/20	Data analysis (student teams)	Data analysis and presentation prep
	Draft Discussion Due (+ any components missed/not previously described)	
13-11/27	Thanksgiving Holiday (no class)	
14-12/4	**Presentation of projects by student teams**	**Presentations**
15-12/11	**Finalize and submit lab reports**	**Last report assistance in lab, submit before midnight**

Your individual project report is due electronically on Friday December 11.