

EVPP 350 - Freshwater Ecosystems
Course Syllabus

Course Description and Goals: This course focuses on physical, chemical, and biological processes occurring in lakes, streams, and wetlands. This course assumes a basic knowledge of ecology and chemistry. Students will learn about the physical and chemical aspects of aquatic systems and the life cycles and adaptations of aquatic organisms. After completion of the course students will be competent to apply ecological concepts to aquatic systems and to understand the impacts of human activities on aquatic ecosystems.

Course Content and Instructional Methods: The subject matter of this course is delivered in the form of lectures, lecture outlines, assigned readings, and laboratory exercises. Week-by-week schedules of activities for lecture and lab are given on the attached lecture and lab syllabi. The instructor provides students with an outline of each lecture and assigned readings which clarify and elaborate on material covered in the lecture. The course has a web page which will contain copies of all course materials. The laboratory is an integral part of the course. There will be six field trips to lakes, streams, and wetlands during the early part of the semester. On these trips numerous observations and measurements will be made in the field and samples will be collected for analysis in the lab in later laboratory sessions. Students will be exposed to a variety of analytical methods, but will specialize in one topic. They will carry this forward as a research topic and prepare a laboratory report and a poster presentation as their grade in the laboratory.

Methods of Evaluation: There will be three exams (one held at the time of the final) each worth 100 points. The final will not be cumulative. The laboratory report and participation in the laboratory will also count 100 pts.

Prerequisites: CHEM 211/212 and either EVPP 110/111 or BIOL 103/104.

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EVPP 350
Aquatic Ecology
Lecture Syllabus

Week	Topic	Reading
1	Properties of Water, Hydrologic Cycle	26-33
2	Watersheds, Stream Flow & Physical Structure	356-365
3	Chemistry of Streams	365-370
4	Biological Communities of Streams	371-383
5	Large Rivers, Exam 1	384-407
6	Lake Origins & Morphometry; Light and Physical Structure of Lakes	457-463 34-99
7	Chemistry of Lakes	100-171
8	Biological Communities of Lakes: Plankton	226-257, 265-291
9	Biological Communities of Lakes: Littoral, Benthos & Fish	257-263, 291-297, 299-331
10	Exam 2, Wetlands: Origins, Hydrology, and Physical Structure	408-424
11	Chemistry of Wetlands	424-425
12	Biological Communities of Wetlands: Primary Producers	425-432
13	Biological Communities of Wetlands: Consumers	
14	Management of Aquatic Systems	499-520

Text: Limnology. Alexander Horne and Charles Goldman. 2nd edition. 1994.

EVPP 350 Aquatic Ecology Lab Syllabus

Laboratory is a required and integral part of EVPP 350. Field trips will start at the scheduled lab time and may extend for slightly longer than the 3 hr scheduled period. It is advised that students not schedule other classes immediately after the lab. Students should wear appropriate clothing depending on the lab activities for a given day. For example, when field work is scheduled students should wear clothing and shoes that can be gotten dirty or wet. In warm weather old sneakers are good and in cooler weather boots may be useful. Lab work may also be dirty so dress appropriately for all lab sessions.

Students are expected to read and review assigned lab materials before attending the laboratory session.

During field collections and the first 11 lab sessions, students will participate in all aspects of the work. However, toward the end of the course, students in consultation with the instructor, will choose a topic to specialize in for the final presentations. They will take the data so gathered and compile it into a lab report and a poster presentation. Students may work individually or in pairs (at the discretion of the instructor) in the gathering of data, but each student must develop their own lab report and presentation working independently. Some examples of areas of specialization could include: Phytoplankton across a range of habitats, phosphorus concentrations across a range of habitats, etc. The presentations will be made in the last two lab sessions. The presentations and lab report will count 2/3 of lab grade with weekly exercises being the other 1/3.

Week	Activity	Reading
1	Stream flow measurement, field water quality and biota: Sites 1 (field)	Chap. 5, 13
2	Stream flow measurement, field water quality and biota: Sites 2 and 3 (field)	Chap. 5, 13
3	Stratified lake physical, chemical and biological collection: Burke Lake (field)	Chap. 2, 6, 10, 11
4	Wetland physical, chemical and biological collection (field)	Chap. 12, 22
5	Workup of field data from first four labs: Intro to data analysis (lab)	Chap. 5, App. 2
6	Stream biota analysis (lab)	Chap. 13
7	Mixed lake physical, chemical and biological data collection: Burke Lake (field)	Chap. 2, 6, 10, 11
8	Nutrient analysis (lab)	Chap. 7
9	Chlorophyll, macrophyte, and solids analysis, phytoplankton ID's (lab)	Chap 10
10	Zooplankton (lake and wetlands) analysis (lab)	Chap. 11
11	Benthic macroinvertebrate (lake and wetlands) data analysis	Chap. 12
12	Workup of field data from labs 6-11.	
13	Presentation of results from lab by students	
14	Presentation of results from lab by students	

Lab text: Wetzel, R.G. and G.E. Likens, Limnological Analyses. 2nd Ed. Springer-Verlag.