SYLLABUS

EEOB 5420 – ECOLOGY OF INLAND WATERS

FALL 2014 (AMENDED OCT. 1, 2014)

Professor: Dr. Jim Bauer, Aquatic Biogeochemistry Laboratory, Dept. of Evolution, Ecology and Organisinal Biology
Bauer Office: 476 Aronoff Lab
Email: bauer.362@osu.edu

Teaching Assistant: Mr. Steve Gougherty, Aquatic Biogeochemistry Laboratory, Dept. of Evolution, Ecology and Organisinal Biology
TA Office: 110 Jennings Hall
Email: gougherty.2@osu.edu

Lectures: Museum of Biological Diversity auditorium, Tues/Thurs 11:10AM-12:30PM

Lab: Museum of Biological Diversity, rm. 1000 unless otherwise noted, DAY/TIMES

Bauer Office Hours: by appointment. See me after class or send e-mail with “need appointment please” subject line.

TA Office Hours: by appointment. See Steve after class or send e-mail with “need appointment please” subject line.

Brief course description: Structure and function of “inland water” ecosystems with application to water quality, fishery and pollution problems. Emphasis on the comparative analysis of aquatic ecosystems, examining lakes, ponds, wetlands, streams, rivers, and estuaries. Lectures will acquaint students with the current state of our knowledge in the aquatic sciences. Labs will familiarize students with some of the most common methods of sampling and analysis of natural waters, sediments and organisms, as well as data analysis techniques.

⇒ This is a highly interdisciplinary and cross-disciplinary field
⇒ Consists of simultaneous application of physical, geological, chemical and biological concepts and principles; also, paleolimnological studies of past conditions

Accommodations for students with disabilities: Students with disabilities that have been certified by the Office for Disability Services (ODS) will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. Office for Disability Services 150 Pomerene Hall, 1760 Neil Avenue telephone 292-3307, TDD 292-0901; http://www.ods.ohio-state.edu/
**Course objectives:** During this course we will:

• learn the major types of water bodies and water courses, know how they are formed and evolved, and understand their place in the hydrologic and biogeochemical cycles.

• learn to quantify, model and predict the physical aspects of aquatic environments (e.g. movement, heat, light).

• understand the importance, measurement, dynamics and cycling of major chemical species in aquatic environments (e.g. alkalinity, phosphorus, nitrogen, oxygen).

• learn how the functioning of aquatic ecosystems is influenced by the geologic and geographic setting of its watershed.

• know the major organisms present in aquatic ecosystems and understand the basics of their ecology.

• learn to quantify, model and predict the biological cycling of energy in aquatic environments and the relationship of biological production to management goals.

• recognize the factors responsible for the zonation of aquatic environments and organisms.

• understand the major aquatic ecosystem management methods and models

• learn how to critically evaluate peer-reviewed papers and studies from the primary literature through in-class discussions

• gain experience with common field and lab techniques in aquatic science

**Carmen:** You should check the course web site on Carmen frequently for messages and announcements, and the evening or morning prior to each class in order to download and bring with you any relevant handouts and other materials for that lecture or lab. Handouts will be uploaded no later than ~10PM the evening before that class (and probably earlier).

**Texts and Other Readings:** The required textbook for this class is


• You are encouraged to at least skim over the assigned chapters prior to that lecture.

• This book is not yet in print, but the authors have made electronic versions of the chapters available in the meantime – these are posted free of charge to you on Carmen.

• Two other excellent books on this subject:
Some copies of these books are available in the Bio Sciences / Pharmacy Library, 1858 Neil Ave.

Some readings (e.g., Encyclopedia of Inland Waters [2010], papers from the primary literature, etc) will be made available as PDF files on Carmen whenever possible.

Supplementary readings listed on the lecture schedule are not required, but will be made available on Carmen for your own interest or if you would like more information on a given topic.

Other required or supplementary readings may be added over the course of the semester if they are timely and as I become aware of them. We would also be happy to learn from you of any new and exciting scientific papers or articles relevant to limnology and aquatic sciences that you become aware of during the fall quarter.

Informative web sites that you should check out (and consider student membership in) and will likely be included in various lectures include:

- American Society of Limnology and Oceanography (ASLO): www.aslo.org
- American Geophysical Union (AGU): www.agu.org/sci_soc/sci_soc.html
- Estuarine Research Federation (ERF): www.erf.org
- Society of Wetland Scientists (SWS) http://www.sws.org/
- Ecological Society of America (ESA): www.esa.org
- American Fisheries Society (AFS): www.afs.org

This is by no means an exhaustive list . . . there are many others

Many include info and additional links on research and educational opportunities, jobs and careers in aquatic sciences, diversity issues and under-represented groups, public outreach, environmental management, etc.

Organizations and foundations supporting research in the aquatic sciences:

- U.S. National Science Foundation (NSF): www.nsf.gov
- NASA Earth Sciences: www.earth.nasa.gov/
- U.S. Environmental Protection Agency (EPA): www.epa.gov
- U.S. Sea Grant: www.seagrant.noaa.gov
- Ohio Sea Grant: www.ohioseagrant.osu.edu
- American Museum of Natural History: www.amnh.org
- Andrew W. Mellon Foundation: www.mellon.org

Also many others, including federal, state, local and private

Aquatic Sciences Journals – MANY available electronically through OSU Library

You can go to the journal homepages and sign up for weekly, monthly tables of contents to be sent to your email
Methods of Evaluation:

**Mid-term and final exams** will each be worth 20% of your total class grade. The final exam will cover only the material since the second mid-term, but keep in mind that the principles of the latter parts of the class will of necessity draw on what you learn earlier. Review sessions will be held 1-2 days prior to the exams (time and location will be announced in advance). Exams will cover lectures, assigned reading materials, as well as readings and discussion topics from the four discussion classes.

Mid-term and final exams will consist of multiple choice, short-answer, and short-essay questions. We will use concept- and problem-solving-based methods of objective testing. Objective questions are created to evaluate your abilities to reason and solve problems. Unprepared students tend to perform poorly on exams and quizzes.

**The 4 discussion classes** will be worth 10% of your total class grade (2.5% each). You are expected to come prepared to discuss the assigned papers in a critical and constructive manner. You must also bring to each discussion class, and email the TA and Dr. Bauer no later than 12 noon the day before, 2 thought-provoking questions about the assigned discussion paper(s). **Amended Oct. 1, 2014:** Submission of your questions is required, not optional, and if not submitted by the required time you will have points deducted from your participation on that discussion class. During the discussion class you are expected to be an active participant in the discussion of that paper(s). One student from each discussion group will be called upon randomly at the start of that discussion to be the leader to get the discussion going and keep it going. Papers for discussion will be uploaded to Carmen at least 1 week prior to that discussion class.

A 1-page summary of the main goals, the primary experimental (including both lab and field) methods used, the main results/findings, and the major conclusions of the assigned discussion paper(s) will be due no later than a week following that discussion class, by depositing in the appropriate Carmen dropbox (the TA will set these folders up each time). You are expected to do this assignment on your own – not in groups. Late assignments will receive zero credit unless there is a valid excuse accompanied by signed physician’s or other professional note. The summary must be submitted as a Word file using 12 point Times New Roman font, and 1-inch margins on all sides. Your name, date and the paper being summarized must be on the first line of the document followed by your summary.

**Labs** will account for 30% of your class grade. Lab exercises and written reports will account for 20% of this and the 5 lab quizzes will be worth 10% (2% each).

In addition, we will be taking a 3-day field trip to OSU’s Stone Lab (Oct. 10-12) that you are required to attend. See me or Steve immediately if you have a conflict with these dates. The approximate cost for this trip (including transportation, housing, meals and lab fees) is expected to be around $200 per student. You will need to make a check out to the Dept. of EEOB for this final amount as we get closer to the trip.

More details on the Stone Lab trip will be provided as the dates for this approach.

**Missed classes and absences (amended Oct. 1, 2014)**

1) Students are allowed to miss one unexcused lecture between each of the two mid-terms and final exam, for a total of three unexcused absences over the semester (in the case of Fall 2014, since we have now held the first mid-term exam, you are from this point forward allowed two unexcused absences for the remainder of the semester – one between Oct. 1 and the second mid-term exam (Nov. 6), and one between the second
mid-term and the final exam). An “unexcused” absence is defined as one in which you are not required to provide any excuse or valid documentation for that absence. Additional absences from lectures require an official note or explanation, on letterhead, from a professional (physician, etc.) explaining why you were unable to attend class.

2) Absences from any of the four discussion classes, labs or exams require a valid written excuse, on letterhead, from the physician or other professional. Without a valid excuse, no credit will be given for that activity. In the event of an excused absence from a discussion class, lab or exam, you are still responsible for all other assignments due for that activity, and must still turn your completed work for these in (or, in the case of an exam, reschedule with Jim and Steve a new day and time to take the exam).

3) For any critical or atypical personal or family matters that may lie outside of regular illnesses, etc. please notify me as soon as you are aware of them so that we can discuss the matter and formulate a remedial plan for lectures or class activities you may miss as a result.

4) Absences of any kind (excused or unexcused) require notifying me and Steve by email ahead of the lecture, discussion class, lab or exam letting us know that you will be unable to attend that particular day’s activity. This means that you must notify us ahead of time of even your two remaining unexcused absences for this semester.

**Cheating or unethical conduct** of any kind will be dealt with following OSU’s general policies on academic misconduct, without exception. The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University’s Code of Student Conduct. Students must recognize that failure to follow the rules and guidelines established in the University’s Code of Student Conduct and this syllabus may constitute Academic Misconduct. “It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp).”

**Laptop use in class** is permitted for note-taking only. Anyone discovered using laptops for e-mail, chats, or anything else not directly connected with note-taking will be asked to leave the class. Similar penalties also apply to the use of other communication devices in class. Please shut down any equipment that is likely to distract you, me and other class members.