

## FRESHWATER ECOLOGY--BIOE 155; Fall 2010

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**INSTRUCTOR:** Jon Moore

Office hours: Thursday 12:00-1:30 or by appointment.

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**TEACHING ASSISTANT:** Walter Heady

Office hours: Tuesday 12:00-2:00 or by appointment.

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**TEXT:** Introduction to Limnology. 2005. Stanley Dodson. McGraw-Hill, Inc.

**LECTURES:** Tuesday/Thursday; 10:00-11:45; COH 118.

**SECTIONS:** Sections meet Wednesday/Thursday, 5:00-6:00 in COH 118 unless otherwise noted. Sections are aimed to supplement and strengthen your understanding of course topic.

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**COURSE OBJECTIVES:** Freshwater Ecology (BIOE 155) will examine the relationships between freshwater organisms and their environment. We will examine the physical, chemical, and biological factors that govern inland waters such as lakes, streams, and wetlands. In this course we will also address interactions between humans and water and discuss these challenges and opportunities in conservation and management. This course will also use a series of *case studies* to highlight the specific concepts and applications.

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**WEBSITE:** [http://bio.research.ucsc.edu/people/moore/BIOE155\\_2010.html](http://bio.research.ucsc.edu/people/moore/BIOE155_2010.html)

Course materials and lecture notes are going to be available on this website. You will probably want to download/print the notes and bring them to class. In addition, this website will have PDFs of reading materials in addition to the textbook.

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**READINGS:** Exams will draw primarily from material covered in class and the case study readings. However, all listed readings are strongly recommended. These case study readings are marked in bold in the syllabus, and each will have a short associated assignment. Readings other than the textbook will be available as PDFs on our class website.

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**EXAMS:** Midterm covers material from September 23 to October 21. The final is comprehensive.

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**ASSIGNMENTS:** Everything is due at the beginning of class on the day it is due. They will be considered late if turned in after the beginning of class.

*Case studies.*—Homework consists of four short assignments on the readings for the case studies. These readings are the starred papers in the syllabus.

*Paper.*—This paper is an opportunity to research the topic of your choice. It is required to turn in the following three components:

1. Paper topic (due: Nov. 4)
2. Annotated outline (due: Nov. 18)
3. Final paper (due: Dec. 2)

*Late assignment policy.*—Homework and papers are due at the beginning of class. Assignments will lose 5% per day if they are late (starting after the beginning of lecture).

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**PARTICIPATION:** This is intended to be a participatory class. 10% of your grade is based on attendance and active participation in lectures, discussion, and sections.

**TENTATIVE SCHEDULE:**

<b>TOPIC</b>	<b>READING (pages in textbook or paper authors)</b>	<b>DATE (bold if something due)</b>
Introduction	3-14	Sept 23
<b>PHYSICAL</b>		
Types, morphometry, and origins of lakes and streams	164; 265-288	Sept 28
Properties of water (light, color, heat)	29-33; 38-39; 46-47	Sept 30
Stratification and water movements	39-44; 50-56	Oct 5
Flow regimes	<b>Bayley*</b>	<b>Oct 7</b> (case study 1)
<b>CHEMICAL</b>		
Overview of chemistry, solubility, pH, redox, salinity	32-37; 231-232	Oct 12
Carbon, Oxygen	44-45; 232-239	Oct 14
Nitrogen, Phosphorus	239-250	Oct 19
Eutrophication and the Lake Washington story	<b>Edmondson*</b>	<b>Oct 21</b> (case study 2)
<b>Midterm Exam</b>		Oct 26
<b>BIOLOGICAL</b>		
<i>In class field trip—Younger Lagoon (rain or shine)</i>		Oct 28
Phytoplankton and Zooplankton	65-78; 85-106	Nov 2
Macroinvertebrates	107-113; 121-124	<b>Nov 4</b> (paper topic due)
Fishes and food webs	124-130	Nov 9
----Veteran's Day, no class---		<del>Nov 11</del>
Lake Victoria	<b>Balirwa*</b>	<b>Nov 16</b> (case study 3)
<b>INTEGRATED</b>		
Salmon in freshwater ecosystems	Schindler	<b>Nov 18</b> (outline and bib due)
Habitat coupling in lakes and streams	<b>Nakano*</b>	<b>Nov 23</b> (case study 4)
----Thanksgiving, no class---		<del>Nov 25</del>
Local stream ecosystems		Nov 30
Water inequality, disease, and war		<b>Dec 2</b> (term paper due)
<b>Final exam (12:00 – 3:00)</b>		<b>Dec 8</b>

**TENTATIVE GRADING SCHEME:**

	<b>% of final grade</b>	<b>Date</b>
<b>EXAMS</b>		
Midterm	25	Oct. 26
Final Exam	30	Dec. 8
<b>SHORT PAPER</b>		
Choose topic	2	Nov. 4
Outline and bibliography	5	Nov. 18
Paper	18	Dec. 2
Case study reviews and questions	10 (2.5 each)	Oct. 7, Oct. 21, Nov. 16, Nov. 23
Participation	10	
<b>TOTAL</b>	<b>100</b>	