

**Introduction to Aquatic Biology**  
**BISC 321, Spring 2020**  
**Meeting: MW 11-11:50 Shoemaker 408**  
**TU 1-3:50 Shoemaker 205 (lab)**

**Dr. Clifford A. Ochs**  
**Office: 332 Shoemaker**  
**Office hrs: TU 9:30-10:45, W 3-5, or by appt.**  
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**BISC 321 Teaching Assistant**

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**Course Catalog Description:** Principles of freshwater biology with emphasis on factors affecting ecology and populations in diverse aquatic environments.

**Broad Objectives**

- to learn about the biology and ecology of freshwater ecosystems
- to learn methods of lab and field research into freshwater ecosystems

**Learning Objectives**

After completing this course, a student should:

- understand basic principles of freshwater ecology and limnology
- understand some of the ways in which freshwater ecosystems are studied.

**Lectures and Readings**

1. Readings will be assigned for almost every lecture. Readings will come from diverse sources.
2. Lectures on Powerpoint will be made available on the class BB site asap after lecture.

**Evaluation (%)**

- Semester tests (2) 40
- Final exam 30
- Lab participation/exercises 30

**Course Grading**

A	92.5-100%	C+	77.5-79.45
A-	89.5-92.45%	C	69.5-77.45
B+	87.5-89.45%	D	59.5-69.45%
B	82.5-87.45	F	<59.5%
B-	79.5-82.45		

## Schedule of Topics – Fall 2020

<b>DATE</b>	<b>DAY</b>	<b>Topic</b>	<b>Reading 1</b>	<b>Reading 2</b>
21 Jan	<b>TU (lab)</b>	Introduction, Watersheds		
22 Jan	W	Lakes and Ecosystem Concept	Lewis 1	Lewis 2
27Jan	M	The Water Cycle	Narasimhan	
28Jan	<b>TU (lab)</b>	Lake profiling 1 (in field)		
29Jan	W	Origin and aging of lakes	Branstrator	
3Feb	M	Energy inputs	Morris	
4Feb	<b>TU (lab)</b>	USDA Sedimentation lab tour		
5Feb	W	Thermal energy & circulation	Boehrer&Schultze (p. 583-588)	
10Feb	M	Oxygen and other gases	Kalff (15)	
11Feb	<b>TU (lab)</b>	Lake Models (in lab)		
12Feb	W	Carbon	Prairie and Cole	Tranvik et al. (2018)
17Feb	M	Phosphorus	Caraco	Carpenter (2008)
18Feb	<b>TU (lab)</b>	Plankton diversity (in lab, probably)		
19Feb	W	Nitrogen	Howarth	Leopold (Odyssey)
24Feb	M	Prim prod and phytoplankton	Reynolds	
25Feb	<b>TU (lab)</b>	Benthos (in field)		
26Feb	W	Benthic 1° prod, macrophytes	Dokulil & Kaiblinger	Cake et al.
2Mar	M	Nutrient use and eutrophication	Smith	
3Mar	<b>TU (lab)</b>	Lake profiling 2 (in field) – Ecosystem metabolism		
4Mar	W	Harmful algal blooms	Burkholder	
16Mar	M	Secondary prod and zooplankton	Sterner	
17Mar	<b>TU (lab)</b>	Nutrient limitation (in lab)		
18Mar	W	2° prod and benthos	Chaloner et al.	
23Mar	M	Microbial ecology	Pernthaler and Posch	
24Mar	<b>TU (lab)</b>	Fish 1 (in field)		
25Mar	W	2° prod and microbes	Roberts and Carr	
30Mar	M	Fish and fisheries	Gido & Hargrave	
31Mar	<b>TU (lab)</b>	Fish 2 (in field)		
1Apr	W	Food webs, cascades	Gaedke	
6Apr	M	River ecosystems–Introduction	Fisher&Sponselle	Bukaveckas
7Apr	<b>TU (lab)</b>	Denitrification 1 (in field)		
8Apr	W	Environmental flows	Poff et al. (1997)	
13Apr	M	River management	Turner and Rabelais	
14Apr	<b>TU (lab)</b>	Denitrification 2 (in field)		
15Apr	W	Reservoir limnology	Nilsson	
20Apr	M	Contaminants	Echols et al.	
21Apr	<b>TU (lab)</b>	Lake profiling 3 (in field)		
22Apr	W	Conservation, Ecosystem Services	Dudgeon et al.	Limburg
27Apr	M	Climate change	Vincent	Wrona et al 2006
28Apr	<b>TU (lab)</b>	Lake profiling synthesis (in lab) - Volta		
29Apr	W	A watershed view	Abell et al.	

## **LAB schedule and topics**

<b>DATE</b>	<b>Topic</b>
21 Jan	Introduction, Watersheds
28Jan	Lake profiling 1 (in field)
4Feb	USDA Sedimentation lab tour
11Feb	Lake Models (in lab)
18Feb	Plankton diversity (in lab, probably)
25Feb	Benthos (in field)
3Mar	Lake profiling 2 (in field), metabolism
17Mar	Nutrient limitation (in lab)
24Mar	Fish 1 (in field)
31Mar	Fish 2 (in field)
7Apr	Denitrification 1 (in field)
14Apr	Denitrification 2 (in field)
21Apr	Lake profiling 3 (in field), Volta
28Apr	Lake profiling synthesis (in lab)

**Assignments** for each lab will vary by lab. Some labs will require only a report of observations or other lab results. Other labs will require a full lab report including an Introduction, Methods, Results, and Discussion. Assignments for each lab will be explained in lab.

### **Optional weekend field trips:**

Sardis Reservoir, Wolf River  
Mississippi River and Tunica River museum  
Reelfoot Lake, TN (overnight)

### **Other Notes and Policies**

1. *Academic Integrity.* Any form of misconduct – cheating, plagiarism, fabrication – will not be tolerated and will subject violators to a failing grade in the course.
2. *Incompletes.* Incompletes will not be given except in extreme circumstances beyond a student's control.
3. Deadline for course withdrawals (no refund) – March 2, 2020
4. **Disability Access and Inclusion:** The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at <https://sds.olemiss.edu> to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at 662-915-7128 so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

***This syllabus is subject to change at the discretion of the instructor to accommodate instructional and/or student needs.***