

## *Course Syllabus*

# **Freshwater Ecology**

Course number: 11:216:335 4 cr.

Section 1 (reg: 46569) for 216 majors only; Section 2 (reg: 53015) open to all majors

Instructors: Dr. Marci Meixler ([meixler@sebs.rutgers.edu](mailto:meixler@sebs.rutgers.edu))

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Prerequisites: 01:119:101-102

## **Meeting times/places**

Lecture: Fridays 12:35 – 1:55, Blake 128

Lab: Fridays 2:15-5:15, Bartlett 012

## **Description**

Freshwater ecology is the study of inland waters including lakes, wetlands, rivers and streams. Theoretical and applied concepts will be covered through lectures, classroom exercises, and labs including several field trips.

## **Learning Goals**

The learning goals in this course are to:

- Express understanding of the physical, chemical, biological, geographical and geological factors of inland waters and how these affect the distribution of organisms.
- Demonstrate proficiency in limnological field techniques.
- Demonstrate skills in identifying aquatic organisms and knowledge of their relationships.
- Understand water resource issues on local, regional and global levels.

## **Textbook (recommended)**

Introduction to Limnology by Stanley I. Dodson. 2004. McGraw Hill. ISBN-13: 978-0072879353; ISBN-10: 0072879351

Book is on reserve in Chang.

## **Academic Integrity Policy**

Academic Integrity. You are responsible for understanding the [RU Academic Integrity Policy](#). I will strongly enforce this Policy and pursue all violations. For all examinations and assignments, you will be required to uphold the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment.” For all written assignments, we will screen your work through an automated plagiarism detection service that compares your work against a large database of past work.

## **Laboratory Requirements**

Some of our laboratory activities will take place in the field. On days we will be going outside you should be prepared for work in lakes and streams by wearing appropriate clothing (waders will be provided). Sampling equipment and transportation to the sites will be provided. Full participation is essential in order to learn the methodological techniques used by limnologists.

## Laboratory Safety Policies

All students will follow proper safety precautions while in the laboratory or field. The first step in lab safety is to know what procedures you will be following.

1. Report all accidents and unsafe conditions whether in lab or the field to your instructor immediately.
2. Know the location of all classroom and building exits. Know the location of all eyewash stations and safety showers, and their proper use.
3. Know the location and use of fire extinguishers. Employees and students are not expected to use fire extinguishers to fight fires. Fire extinguishers should only be used to clear a path out of a room or building if you become trapped during a fire.
4. If there is an emergency in the field and your instructor is incapacitated dial **911** immediately.
5. Use eye protection and gloves when instructed to do so. You will be notified if you are using any potentially hazardous materials.
6. Treat all sharp objects with exceptional caution. Report any blood spill to your lab instructor immediately. Cleanup instructions should be posted in each lab.
7. Wash hands before and after laboratory and field exercises.
8. Wear appropriate clothing in both the lab and field settings. Bare midriiffs, shorts and sandals are not permitted in lab. They are also strongly discouraged for fieldwork.
9. Follow written and verbal protocols, procedures, and instructions. Perform only authorized work. If there are any questions as to the nature of this work, ask your instructor.
10. When entering water during field exercises use caution. Never work in water deeper than your waist without permission from your instructor.
11. Do not pipette any liquids by mouth in the laboratory or field.

## Grading System

Attendance & participation: This is critical to understanding both the lecture and lab material. Participation in the classroom exercises improves the quality of the class for everyone.

Weekly lecture outlines: weekly outlines (to be submitted online to the dropbox) will help motivate you to watch the online lectures. Outlines will not be accepted late. **Please name your outlines: LASTNAME\_FIRSTNAME\_WEEKX where X is the number of the week for which you are submitting. Acceptable formats include word and pdf.**

Reviews: these serve as exam review. You are expected to turn in one question and answer (any form: multiple choice, T/F, short answer, essay, etc) for each lecture topic before the midterm and then from midterm to final.

Exams: There will be one midterm and a final exam in lecture and a lab practical. The final exam is non-cumulative. Medical note required for makeup exams.

Projects: There will be a conservation oriented lecture project and a monitoring oriented lab project in class. Project details can be found on the course website.

Lab: study sheets, in-class assignments, homework assignments, and lab quizzes will all be used to help you learn the material and test your knowledge.

<b>Graded item – lecture (50%)</b>	<b>%</b>	<b>Pts</b>
Attendance & participation	3%	10
Weekly lecture outlines (13)	18%	130
Lecture projects (conservation & earth day)	5%	15
Reviews (2)	4%	10
Midterm exam	10%	100
Final exam	10%	100
<b>Totals</b>	<b>50%</b>	<b>365</b>

<b>Graded item – lab (50%)</b>	<b>%</b>	<b>Pts</b>
Attendance & participation	1.5%	10
Study sheets (10 pts/each)	11%	80
In-class assignments (10 pts/each)	8%	60
Homework assignments (10 pts/each)	3%	20
Lab quizzes (10 pts/each)	4%	30
Lab project	9%	65
Lab practical	13.5%	100
<b>Totals</b>	<b>50%</b>	<b>365</b>

## Class schedule – Lecture

Week	Lecture Topic	Class Exercise	Chapter	Due
1	Limno intro	Basics of water	1	
2	Water in Landscapes	Watersheds	11	Outline intro & Outline landscapes
3	Water as environment	Properties, stratification	2	Outline environment
4	Small animals	Pathogens, conservation <i>Conservation Project assigned</i>	3	Outline small
5	Medium sized animals	Organisms and IBIs	4	Feb 16 midnight: conservation list Outline medium
6	Large organisms	Organisms	5	Outline large Conservation project
7	Population dynamics	Population dynamics Midterm review	6	Outline populations; Review questions/answers (weeks 1-7)
8	Killer lakes!	<b>Midterm Exam (weeks 1-7, online in Loree 007)</b>		Outline killer lakes
9	<i>Spring Break – no class</i>			
10	Communities	Communities & <i>Earth day organization day</i>	7	Outline communities
11	Community ecology	Community Ecology	8	Outline com ecology
12	Energy flow	Energy flow	9	Outline energy flow
13	Chemical cycles	Guest speaker: Rita Grunberg (disease ecology in freshwater ecosystems)	10	Outline chemical cycles
				<b>EARTH DAY!</b>
14	Citizen limnology	Final review	12	Outline citizen limnology; Review questions/answers (weeks 8-14)
15	<b>Final Exam (weeks 8-15, online in</b>			

**Notes:**

Outlines and review questions are due by class on the due day  
You are welcome to turn any assignments in early

SAMPLE

## Class schedule – Lab

Week	Lab Topic	Due
1	Introduction/Scientific Method	Study Sheet-1 In-class Assignment 1
2	Watersheds and Physical/Chemical Properties of Freshwater	Study Sheet-2 In-class Assignment-2
3	Stratification	Homework Assignment-1 Study Sheet-3 In-class Assignment-3
4	Photosynthesis <b>Quiz 1</b>	Study Sheet-4 In-class Assignment-4
5	Abiotic Sampling <b>Field Trip: Rutgers Ecological Reserve</b>	Study Sheet-5
6	Introduction to Freshwater Macroinvertebrates <b>Quiz 2</b>	Study Sheet- 6
7	Field Biotic Sampling <b>Field Trip: North Branch</b>	Homework Assignment-2
8	Field Biotic Sampling (& abiotic) <b>Field Trip: North Branch</b>	
9	<i>Spring Break – no class</i>	
10	Identification of Biotic Samples	Study Sheet- 7 In-class Assignment-5
11	<b>Field Trip: Westons Mill Pond</b>	
12	Population/Community Ecology	Study Sheet-8 In-class Assignment-6
13	<b>Field Trip: Round Valley Reservoir</b>	
14	Lab Practical Review <b>Quiz 3</b>	Monitoring project
15	Lab Practical	