



# LIMNOLOGY

Conservation of Aquatic Resources

Tues & Thur 9:55 – 10:45 AM | Noland 132

## GENERAL INFORMATION



**Modality & Interaction:**  
In-person instruction 2x per week, regular feedback on assessment



**Designations:**

- Breadth: Biological Sciences
- Level: Intermediate
- Liberal Arts and Science credit (LAS)



**Course Website:** all materials for this course and communication will be through Canvas.



**Pre-requisites:**

Introductory biology (BIO/ZOO 101, 152 or equivalent) or instructor permission



**Credit Hours:** This **2-credit class** meets for two, 50-minute class periods each week during fall semester. It is expected that students will work on course learning activities (reading, problem sets, studying, etc.) for ~2 hours out of the classroom for every class period. This syllabus includes additional information about meeting times and expectations.

## CO-INSTRUCTORS



**Dr. Hilary Dugan** [she/her]  
<https://dugan.limnology.wisc.edu/>

**Dr. Grace Wilkinson** [she/her]  
<https://wilkinsonlimnolab.weebly.com/>



**Contact:** All messages regarding course content and student questions should be **sent through Canvas** messaging platform. Address your message to **both** Dr. Dugan **and** Dr. Wilkinson



**Office Hours:** By appointment; unless scheduled immediately preceding or following lecture, meetings will occur virtually

## COURSE DESCRIPTION

This is a general limnology course, focusing on the physical, chemical and biological characteristics and processes of lakes as well as environmental problems and rehabilitation of lake ecosystems.

### #1: Physical Limnology



**OUTCOMES:** Understand how physical processes govern aquatic ecosystem dynamics



**TOPICS:** Intro to Limnology, Lake Origins, Water Resources & Budgets, Groundwater, Rivers, Light, Stratification and Water Movement



**ASSESSMENT:** Mendota Field Trip, Quizzes #1-3, Exam 1

### #2: Chemical Limnology



**OUTCOMES:** Describe and analyze chemical data from inland waters to assess ecosystem functioning



**TOPICS:** Salinity, Alkalinity, pH, Dissolved oxygen, Dissolved matter, sediments, nitrogen, phosphorus



**ASSESSMENT:** Data Assignment, Quizzes #4-6, Exam 2

### #3: Biological Limnology



**OUTCOMES:** Understand how aquatic organisms influence ecosystem dynamics



**TOPICS:** Eutrophication, Primary Production, Zooplankton & Zoobenthos, Fish & Waterfowl, Food webs, Biodiversity



**ASSESSMENT:** Quizzes #7-9, Exam 3

### #4: Emerging Topics



**OUTCOMES:** Identify human impacts on freshwater ecosystems and understand limnological challenges for Wisconsin's waterbodies.



**TOPICS:** Climate Change, Invasive Species, Contaminants, Lake Restoration, Extreme Lakes



**ASSESSMENT:** Quizzes #10-11, Final Exam



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### GRADING

#### EXAMS (60%)



Exams 1-3 cover the content in the current module. The final will be cumulative. **Make-up exams are not allowed.**



On Canvas proctored in the classroom or remotely through recorded Zoom (failure to sign onto zoom with camera on will result in a zero). The exam is only available during the scheduled class period.



You are expected to take the exam **alone**. The questions are **open resource** but not open to outside help, including sites like Chegg.



There will be 4 exams, each worth 20% of the final grade. The lowest exam grade of the 4 exams will be dropped from your final grade.

#### ASSIGNMENTS (20%)



**Mendota Sampling Trip (4%):** Sign up for a time slot to sample Lake Mendota. A written assignment will be completed at that time.

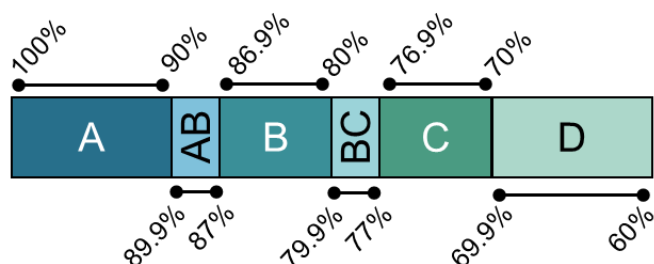


**Data Assignment (16%):** The objective of this two-part assignment is to analyze and interpret limnological data and to improve your data handling and data interpretation skills. The assignments are detailed on Canvas.

#### QUIZZES (20%)

The quizzes are **open resource** weekly quizzes on the content presented during lecture from the prior week. These quizzes are available through Canvas and always due on Mondays at 11:59 PM central time. Late quizzes will not be accepted.

### GRADE SCALE



### COURSE SCHEDULE\*\*

**\*\*Note that weekly quizzes, due on Mondays, are not noted on this schedule but are assigned in Canvas.**

PHYSICAL LIMNO	Date	Topic
	Sept 8	Introduction to Limnology
	Sept 13	What are Lakes?
	Sept 15	Watersheds
	Sept 16	Mendota Sampling Day
	Sept 20	Groundwater & Rivers
	Sept 22	Stratification
	Sept 27	Mixing and Water Movement
	Sept 29	Light
	<b>Oct 4</b>	<b>Exam 1 – Physical Limnology</b>

CHEMICAL LIMNO	Date	Topic
	Oct 6	Salinity
	Oct 11	Alkalinity & pH
	Oct 13	Dissolved Oxygen
	Oct 18	DOM & Sediments
	Oct 18	Data Assignment Part 1 due
	Oct 20	Nitrogen
	Oct 25	Phosphorus
	<b>Oct 27</b>	<b>Exam 2 – Chemical Limnology</b>

BIOLOGICAL LIMNO	Date	Topic
	Nov 1	Primary Production
	Nov 3	Eutrophication
	Nov 8	Zoobenthos & Zooplankton
	Nov 10	Food webs & Trophic Cascades
	Nov 15	Freshwater Biodiversity
	Nov 17	Aquatic Invasive Species
	<b>Nov 22</b>	<b>Exam 3 – Biological Limnology</b>

EMERGING TOPICS	Date	Topic
	Nov 29	Ecosystem Services
	Dec 1	Contaminants
	Dec 6	Climate Change
	Dec 8	Implications of Changing Lakes
	Dec 8	Data Assignment Part 2 due
	Dec 13	Lake Management & Restoration
	<b>Dec 17</b>	<b>Final – Cumulative Exam</b>



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### ACCOMODATIONS



A PDF of all lecture slides will be posted after the lecture is delivered on the same day.



Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. We will work either directly with you or in coordination with the **McBurney Center** to identify and provide reasonable instructional accommodations.



Accommodations for religious observances can easily be made. Please send us a message through Canvas to begin a conversation.

### INCLUSIVE CLASSROOM

Diversity is a source of strength, creativity, and innovation. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community.

***As the instructors, we will work to create and maintain an inclusive space for our learning.*** If you have concerns about your ability to freely participate in class, please speak with us about your concerns. We will work together to ensure that you can be an active and engaged member of our class community.

### USE OF COPYRIGHT MATERIAL

Lecture materials and recordings for this course are protected intellectual property. Students may use the materials and their notes for personal use related to participation in this class. You are not authorized to record the lectures without our permission unless you are considered to be a qualified student with a disability requiring accommodation. ***Students may not post lecture materials on internet sites or sell to commercial entities.*** Students are also prohibited from providing or selling their personal notes to anyone or being paid for taking notes by any person or commercial firm. Unauthorized use of copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies (UWS Ch 14 & 17).

### ACADEMIC INTEGRITY

Academic integrity is vital to your success. If you cheat you are taking away an opportunity to learn and develop skills. ***Cheating also hurts your future.*** You are preparing for a career to help others and the environment. If you do not learn how to do this work, you have cheated those you are working to help out of a knowledgeable professional.

Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

### OTHER RESOURCES



Staying healthy is vital for your academic success and personal wellbeing. University Health Services (**UHS**) allows for online scheduling and same-day appointments.

<https://www.uhs.wisc.edu/>



College can be stressful and that stress can be magnified by the pandemic, personal situations, and social unrest. Taking care of your mental health is essential. **UHS** and the **Dean of Students Office** can help. <https://www.uhs.wisc.edu/mental-health/>



If you are having trouble with your coursework or would like additional assistance, **Academic Support** has free resources for students including tutoring.

<https://academicsupport.wisc.edu/>



It's important to stay up-to-date on changes to the policies pertaining to the ongoing pandemics. Use the **COVID Response website** as a central resource for this information.

<https://covidresponse.wisc.edu/>