

BIOL-4280 LIMNOLOGY (Fall 2021)

Pre-Requisites: Ecology, Field Biology OR by permission

Final version dated 21 September 2021

Instructor: Dr. Catherine Febria

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Graduate Assistant (GA): Lauren Weller (weller2@uwindsor.ca)

Lectures: Tuesdays & Thursdays @ 1-2:20pm ET

All lectures will be delivered live/synchronously virtually via Blackboard. Lectures will be recorded and made available on Blackboard. See Schedule for critical dates where live/synchronous attendance and participation is crucial for student success.

Office Hours: Virtual, by appointment (please email Dr. Febria or Ms. Weller as appropriate)

Textbook: There is no formal textbook. We will periodically refer to Kalff, J. 2002. Limnology: inland water ecosystems in addition to a series of readings, videos and podcasts that will be made available online posted on Blackboard via Leganto (click on 'Course Readings' tab).

Grading

Mid-term exam – October 19th @ 1-3pm ET via Blackboard - (20%)

Lab Reports (45%)

 Lab 1 – 5%

 Lab 2 – 20%

 Lab 3 – 20%

 Optional: At-home bonus lab – 5%

Discussion & participation in Labs 2 & 3/SoTL (10%)

Final exam – Date TBA - (25%)

Key dates

Voluntary withdrawal – December 6, 2021

Course review - last lecture of the course (Dec 2, 2021)

Course Description - Limnology is the study of inland freshwaters such as lakes and wetlands, as well as rivers, streams and ponds. We will take a holistic approach to learning about the lentic ecosystems globally, the challenges and issues they face beginning with covering the fundamentals: biological and physical processes, and interactions across scales. We will begin the course with an overview of the discipline's history then will systematically explore the biological and physical concepts underpinning inland freshwater ecosystems, and then integrate knowledge to understand limnological management issues and solutions. Labs will be integrated into "flipped" and embedded into our lecture formats with some lectures featuring

expert panels featuring Great Lakes researchers and policy-makers, and guest speakers to deliver broad coverage and perspectives on this dynamic, interdisciplinary field.

Course Goals:

By the end of this course, students will:

1. Understand fundamental concepts and terminology used in limnology
2. Interrogate how inland waters are structured and function at a range of scales
3. Engage in interdisciplinary and multi-dimensional thinking on issues related to freshwater science and management
4. Develop critical skills needed to read, interpret and analyse limnological data and apply them to environmental problem-solving
5. Practice working as a collaborative research team

Midterm Exam: Tuesday October 19, 2021 via Blackboard (2 hrs, released at 1.30pm)

Covers lecture material inclusive of September 9th to October 7th, 2021.

Final Exam: Date TBA. Comprehensive of the course.

Major Lab Assignments:

Lab 1 – Privilege walk (2.5% + 2.5% = 5% of total grade)

Lab 2 – Water Quality and land use (20%) – pre-reading & read over the assignment

Lab 3 – Impacts of climate change on lakes (15%) – pre-reading and R software update/packages

Optional: Home-based lab for a bonus 5% (to be discussed at an upcoming lecture)

How to do well in this course:

While this course is delivered online, we are committed to delivering a high-quality learning experience. We are not gathering physically however it is encouraged that you participate fully to successfully meet the learning outcomes. To support your learning success, A PDF of each lecture will be posted on Blackboard no later than 12pm on the day of each scheduled live/synchronous lecture. Feel free to download or view digitally as you prefer. Any required readings will be posted at the end of each lecture PDF, and electronically on Blackboard's course resource list. Thus, to do well, it is your responsibility to:

1. Attend lectures (synchronous/live attendance is recommended/preferred)
2. Skim lectures before class, re-read in greater depth with the supporting readings
3. Be ready to participate and engage (even in a virtual setting)
4. Ask questions - this includes asking your peers and the instructor (use the chat function!)
5. Plan ahead and begin working on your project and exams well ahead of time

Participation: We have integrated participation marks into Labs 2 and 3 as part of our 'flipped' learning approach in a virtual course setting. These will be explained with each labs, check the schedule for the dates when attendance is essential for earning these grades.

Late assignments: Please contact Dr. Febria directly. If you have an extenuating circumstance, please contact the instructor as soon as possible to work out a reasonable solution.

Statement on the Scholarship of Teaching and Learning (SoTL):

Your labs will be delivered using a “flipped” model with the bulk of the hands-on work happening during lecture. What is a “flipped” classroom? A *flipped classroom* is an instructional strategy and a type of blended learning, which aims to increase student engagement and learning by having students complete readings at their home and work on live problem-solving during class time. In this class, we will be engaging this strategy to more impactfully deliver the content of Labs 2 and 3. By being a student in this course, you are part of broader research examining the impact of lab delivery in Limnology under a more traditional setting (2019) and this year’s flipped setting (2021). Your thoughtful participation in the process – i.e., the submitted reflections – are integral to the learning and informing our understanding of this teaching strategy. You will be provided with a clear opt-in/out for the use of any data collected at the end of the course.

Statement on equity, diversity and inclusion:

It is essential that all students are well-supported in this class. I would like to acknowledge that science (and in particular the field of limnology) has historically been built by a select number of privileged voices - mostly male, Eurocentric voices. Thus, the selected readings for this course are written and undertaken from that lens, and will inevitably be biased. While that does not change the quality of the science, or the science norms of the past, I will do my best to ensure that a broader range of perspectives and voices are shared and woven throughout the course and in the development of your skills as a contemporary scientist.

Furthermore, my intention is to create a welcoming environment that fosters room for development, creative thinking, engaged discussion and respectful debate. I strive to support the wide diversity of thoughts and experiences and honour your identities and preferences. To help with this, please let me know as soon as possible if:

- You have a preferred pronoun that is different from the course register (Dr. Febria’s pronouns are she/her/siya)
- Your participation in the course is impacted negatively by experiences outside of the class
- The instructor or GA take any missteps in representing diverse perspectives. I am still learning and will fail occasionally (but never intentionally).

In all cases, anonymous feedback is an option. If I need to enact upon any feedback that requires addressing the class, I will keep the feedback anonymous.

Comments, questions and/or suggestions for resources to be incorporated into future versions of this course as also welcome. Please contact Dr. Febria!

Stay connected - The USci Network

The USci Network brings together students, faculty and staff from across all Faculty of Science programs to work collaboratively in providing a unique integrative support system with the goal

of enriching the student experience. Students can participate in many of our initiatives including Careers in Science, Science Meets Art (SMArt), Women in Science (WinS), Destination Science, Sci of Relief and Science Living Learning Community. An information flyer is attached to this course syllabus.

Self-reporting of medical and compassionate absences: Doctor's notes are NOT required for medical absences. You are asked to use **UWinside Student** to report an illness that will prevent you from completing an assignment on time or taking an exam. For how-to information, please read this **ask.UWindsor article**. Please do NOT come to campus if you are unwell.

Lecture Schedule

Date	Lecture Schedule	Assessment Schedule	Due date
Thurs Sept 9	Course Overview; History of Limnology	Lab 1: Privilege Walk (2.5% of grade)	Sun Sept 19 @ 11.59pm
Tues Sept 14	Physical limnology 1 - classification, watersheds		
Thurs Sept 16	Physical limnology 2- light, temperature, movement	Lab 2 Water Quality: Recorded Intro to Lab (virtual); 20% of grade	
Tues Sept 21	Physical limnology 3 - nutrient cycles		
Thurs Sept 23	Lab 2: LIVE - Working Lab/Discussion Groups		Pre-lab reflection due Sept 23 @ 12.59pm
Tues Sept 28	Physical limnology 3 - nutrient cycles		
Thurs Sept 30	Lab 2: LIVE - Working Lab/Discussion Groups		
Tue Oct 5	Physical limnology 4 - Interactions		
Thurs Oct 7	LIVE: Intro to R / Virtual lab (Roger)	Submit Lab 2	Sun Oct 10 @ 11.59pm
Tues Oct 12	READING BREAK (no class)		
Thurs Oct 14			
Tues Oct 19	Midterm (Blackboard)	Midterm	Tues Oct 19 @ 1-3pm
Thurs Oct 21	No lecture	GLIER GLWQ Panel (TBD)	
Tues Oct 26	Biological limnology 1 - Benthos (bacteria, zoo, phyto)	Lab 3 Lake Modelling: Recorded Intro to Lab(virtual); 20% of grade	
Thurs Oct 28	Biological limnology 2 - Plankton (fish, plants)		
Tues Nov 2	Biological limnology 3 - macroinvertebrates		
Thurs Nov 4	Biological limnology 4 - Food webs / R questions (Roger)		
Tues Nov 9	Lecture: Synthesis of concepts		
Thurs Nov 11	LAB 3: LIVE - Working Lab/Discussion Groups		Pre-lab reflection due Nov 11 @ 12.59pm
Tues Nov 16	Lecture: Global limnology		
Thurs Nov 18	LAB 3: LIVE - Working Lab/Discussion Groups		
Tues Nov 23	Management & Solutions 1		
Thurs Nov 25	Lab 3: LIVE – Student Gallery Walk		
Tues Nov 30	Management & Solutions 2: Guest Lecture (Lauren Weller)	Lab 3: Submit Lab 3	Sun Dec 5 @ 11.59pm
Thurs Dec 2	LAST CLASS - Course summary (students choice!)	Lab 1: Privilege Walk redux (2.5% of grade)	Friday Dec 3 @ 11.59pm

