LAKE ECOLOGY (BIOL G4463)
Spring 2027

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Office hrs: by appointent

Meeting time & Place: Class will meet twice weekly on Tuesdays and Thursdays from 10:30-11:45 in Bizzell Library, Room 0104.

Other important dates to note: 18 Feb: Exam 1; 01 Apr: Exam 2; 12 May: Exam 3 (Final).

Course Objective: To provide students with a broad overview of the field of lake ecology (or more broadly, limnology, the study of inland waters) via classroom discussions based on readings from the primary literature.

Learning outcomes

- Describe the key scientific approaches used to study lake ecosystems;
- Analyze and interpret peer-reviewed literature in aquatic sciences;
- Demonstrate understanding of patterns and processes of abiotic drivers in aquatic ecosystems, including physical and chemical parameters;
- Articulate relationships between abiotic and biotic components of aquatic ecosystems;
- Identify and describe the broad functions of key groups of aquatic organisms;
- Create management techniques for freshwater ecosystems based on fundamental principles of aquatic ecosystems.

Text: Readings will be assigned from a variety of limnological texts and research journals and are posted in pdf form in Canvas for this course.

Grading policy:

Homework	10%	Exam 1	20%
Quizzes	10%	Exam 2	20%
Discussion Participation	20%	Exam 3	20%

Grading scale:
A (100-90), B (89-80), C (79-70), D (69-60), F (<60)

Homework (10%):
Each day of lecture, students will be required to hand in a brief written summary of the day's assigned reading using a provided template. The rubric for homework grading will be provided when the template is provided. Homework assignments will be equally weighted, making up a total of 10% of the course grade.

Quizzes (10%):
There will be weekly in-class quizzes covering material from lecture as well as the assigned readings. These quizzes will include 2-3 short-answer questions. Each of the fifteen quizzes will be equally weighted.

Discussion Participation (20%):
Students will be expected to come to class prepared, having completed the assigned readings and assignments and to participate actively in classroom discussions. Active participation will be assessed by answering questions, asking questions, and engagement during periodic work in small groups. Participation points for each day will be equally weighted, making up a total of 20% of the course grade.

Exams (60%)
There will be three exams over the course of the semester, each comprising 20% of the final grade. In class exams will take the form of several short-answer questions and essays.

Graduate credit:
Lake Ecology (BIOL G4463) is approved for graduate credit. **If an undergraduate student wishes to receive graduate credit for the course, the student must declare so in the graduate college within the first two weeks of the semester.**

COURSE POLICIES

Technology:
Use of technology in class is encouraged, particularly as it pertains to reducing the use of paper, and ultimately water. *However, use of electronic social media (email, Facebook, etc.) during class will negatively affect your grade.*

Attendance:
Attendance is mandatory. Students are responsible for the content of this course. Students have a responsibility to inform me prior to absences whenever possible. I will make every effort to find a reasonable accommodation for students who miss class.

Academic misconduct:
I follow the University's policies on academic misconduct and I expect you to be familiar with these policies (http://integrity.ou.edu). Unless otherwise specified (group discussions/projects, for example), the work you turn in must be yours and yours alone. I expect you to provide citations of sources you use in all assignments. I will report any cases of cheating, plagiarism, and improper collaboration. Sanctions for academic misconduct can include expulsion from the University or an F in this course, so please take this seriously. If you have questions about properly citing sources, paraphrasing from those sources, or other aspects related to these issues please don't hesitate to contact me or the OU Writing Center. If you have questions about appropriate collaboration with group members, again, please ask me.

Generative AI statement:
The use of Generative AI, including, but not limited to, ChatGPT, CoPilot, ClaudeAI, Gemini, and Grammarly AI, is considered a violation of the academic integrity policy for this course. As the use of Generative AI to assist in completing any aspect of work for this course is prohibited, this includes using Generative AI to write outlines, conduct research, and to take your quizzes or exams. If using an e-book or search engine that has integrated Generative AI, then you should not rely on the Generative AI output and engage instead with the source material. If you have any questions about this policy or what counts as Generative AI, please talk with me. Consequences for Violating the Generative AI Usage Policy: Any usage of Generative AI in this course may be considered a violation of the academic integrity policy for this course and could result in a zero for an assignment or a failing grade on the course.

UNIVERSITY POLICIES

Mental Health Support Services
Support is available for any student experiencing mental health issues that are impacting their academic success. Students can either been seen at the University Counseling Center (UCC) located on the second floor of Goddard Health Center or receive 24/7/365 crisis support from a licensed mental health provider through TimelyCare. To schedule an appointment or receive more information about mental health resources at OU please call the UCC at 405-325-2911 or visit University Counseling Center. The UCC is located at 620 Elm Ave., Room 201, Norman, OK 73019.

OU Reasonable Accommodation Policy:
The University of Oklahoma (OU) is committed to the goal of achieving equal educational opportunity and full educational participation for students with disabilities. If you have already established reasonable accommodations with the Accessibility and Disability Resource Center (ADRC), please log into iAdvise to request your semester accommodations as soon as possible and contact me privately, so that we have adequate time to arrange your approved academic accommodations.

If you have not yet established services through ADRC, but have a documented disability and require accommodations, please complete ADRC's pre-registration form to begin the registration process. ADRC facilitates the interactive process that establishes reasonable accommodations for students at OU. For more information on ADRC registration procedures, please review their website. You may also contact them at (405)325-3852 or adrc@ou.edu, or visit www.ou.edu/adrc for more information.

Note: disabilities may include, but are not limited to, mental health, chronic health, physical, vision, hearing, learning and attention disabilities, pregnancy-related. ADRC can also support students experiencing temporary medical conditions.

Final Exam Preparation Period:
Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's Final Exam Preparation Period policy.

Religious observances:
It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.

Adjustments for Pregnancy/Childbirth Related Issues:
Should you need modifications or adjustments to your course requirements because of pregnancy or a pregnancy-related condition, please request modifications via the Institutional Equity Office website or call the Institutional Equity Office at 405/325-3546 as soon as possible. Also, see the Institutional Equity Office FAQ on Pregnant and Parenting Students' Rights for answers to commonly asked questions.

Title IX Resources and Reporting Requirement:
The University of Oklahoma faculty are committed to creating a safe learning environment for all members of our community, free from sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX. There are resources available to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you have (or someone you know has) experienced any form of sex-based discrimination or violence and wish to speak with someone confidentially, please contact OU Advocates (available 24/7 at 405-615-0013) or University Counseling Center (M-F 8 a.m. to 5 p.m. at 405-325-2911).

Because the University of Oklahoma is committed to the safety of you and other students, and because of our Title IX obligations, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report sex-based violence that has been disclosed to us to the Institutional Equity Office. This means that we are obligated to report sex-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. You may also choose to report directly

to the Institutional Equity Office. After a report is filed, the Title IX Coordinator will reach out to provide resources, support, and information and the reported information will remain private. For more information regarding the University's Title IX Grievance procedures, reporting, or support measures, please visit Institutional Equity Office at 405-325-3546.

Emergency Protocol
During an emergency, there are official university procedures that will maximize your safety.

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather.

1. Look for severe weather refuge location maps located inside most OU buildings near the entrances
2. Seek refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.
3. Go to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. Get in, Get Down, Cover Up
5. Wait for official notice to resume normal activities.

Additional Weather Safety Information is available through the Department of Campus Safety.

The University of Oklahoma Active Threat Guidance
The University of Oklahoma embraces a Run, Hide, Fight strategy for active threats on campus. This strategy is well known, widely accepted, and proven to save lives. To receive emergency campus alerts, be sure to update your contact information and preferences in the account settings section at one.ou.edu.

RUN: Running away from the threat is usually the best option. If it is safe to run, run as far away from the threat as possible. Call 911 when you are in a safe location and let them know from which OU campus you're calling from and location of active threat.

HIDE: If running is not practical, the next best option is to hide. Lock and barricade all doors; turn of all lights; turn down your phone's volume; search for improvised weapons; hide behind solid objects and walls; and hide yourself completely and stay quiet. Remain in place until law enforcement arrives. Be patient and remain hidden.

FIGHT: If you are unable to run or hide, the last best option is to fight. Have one or more improvised weapons with you and be prepared to attack. Attack them when they are least expecting it and hit them where it hurts most: the face (specifically eyes, nose, and ears), the throat, the diaphragm (solar plexus), and the groin.

Please save OUPD's contact information in your phone.

NORMAN campus: *For non-emergencies call (405) 325-1717. For emergencies call (405) 325-1911 or dial 911.*

Fire Alarm/General Emergency:
If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates:

1. *LEAVE* the building. Do not use the elevators.
2. *KNOW* at least two building exits
3. *ASSIST* those that may need help
4. *PROCEED* to the emergency assembly area
5. *ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.*
6. *WAIT* for official notice before attempting to re-enter the building.

OU Fire Safety on Campus

BIOL G4463 *Lake Ecology: Tentative Syllabus (subject to change)*

Date	Day	Lecture Topic	Required Reading
19-Jan	T	1. Limnology: Introduction & Brief History	Kalff (2002), Ch 2; Cole and Weihe (2016), Ch 5
21-Jan	R	2. Origin of lakes (lake formation & morphometry)	(Kalff 2002b, c) – Chapters 6 & 7
26-Jan	T	3. Light, heat, and stratification	Cole and Weihe (2016), Ch 9–10
28-Jan	R	4. Lake Classification and Oxygen	Cole & Weihe (2016), Ch 12; Cornett & Rigler (1979)
02-Feb	T	5. Nitrogen and Phosphorus	Cole & Weihe (2016), pp. 349-362
04-Feb	R	6. Phytoplankton Nutrient Limitation	Schindler (1974), Elser et al. (1990)
09-Feb	T	7. Nutrients and predicting phytoplankton biomass	Dillon & Rigler (1974), McCauley et al. (1989)
11-Feb	R	8. Phosphorus, Nitrogen & Cyanobacteria	Smith (1983), Downing et al. (2001)
16-Feb	T	*Review*	
18-Feb	**R**	**Lecture Exam 1**	**--**
23-Feb	T	9. Zooplankton Diversity	(Dodson 2005) – Chapter 4
25-Feb	R	10. Zooplankton grazing and nutrient mineralization	Burns (1968), Hambright et al. (2007)
02-Mar	T	11. Herbivorous zooplankton and phytoplankton	Mazumder & Havens (1998), Sommer et al. (2001)
04-Mar	R	12. Predatory zooplankton	Gilbert (1966), Neill (1990)
09-Mar	T	13. Competition and predation in zooplankton: planktivorous fish	Brooks & Dodson (1965), Hurlbert et al. (1972)
11-Mar	R	14. Microbial consumers and the microbial loop	Carrick et al. (1991), Porter (1996), Hambright et al. (2007)
16-Mar	**T**	**No Class – Spring Break**	**--**
18-Mar	**R**	**No Class – Spring Break**	**--**
23-Mar	T	15. Top-down and bottom-up regulation of plankton	Mazumder (1994), Brett & Goldman (1997)
25-Mar	R	16. Piscivorous fish and trophic cascades	Zaret & Paine (1973), Carpenter et al. (1985), Drenner & Hambright (2002)
30-Mar	T	*Review*	
01-Apr	**R**	**Lecture Exam 2**	**--**
06-Apr	T	17. Eutrophication & Lake Washington	Edmondson (1970)
08-Apr	R	18. Climate change & Lakes	Jane et al. (2021), Knoll et al. (2019)
13-Apr	T	19. Invasive Species	Johnson et al. (2008)
15-Apr	R	20. Harmful algal blooms: Golden algae	Remmel et al. (2011), Remmel & Hambright (2012)
20-Apr	T	21. Winter Limnology	Reinl et al. (2023)
22-Apr	R	22. Harmful algal blooms: Cyanobacteria	Paerl et al. (2016)
27-Apr	T	23. Killer Lakes	Kling et al. (1987), Kling et al. (2005)
29-Apr	R	24. Water Crisis	Jackson et al. (2001)
04-Apr	T	25. Paleolimnology / Resurrection ecology	Kitchell & Kitchell (1980), Hairston et al. (1999)
06-May	R	*Review*	--
12-May	**W**	**Exam 3**	**8-10 AM**