

Aquatic Trophic Ecology
BIOL 883, 3 credits
Spring 2022

Department of Biology
College of Natural and Social Sciences
University of Nebraska Kearney

CLASS LOCATION AND MEETING TIME:

This course is delivered entirely in an online format; consequently, there will not be any on-campus meetings. Also, there are no formal online meeting requirements for this course, though regular check-ins throughout the week are highly recommended. Deadlines for all assessments are provided in Canvas in several locations (e.g., on the assignment directions, in the announcements, etc.).

COURSE WEBSITE: canvas.unk.edu

INSTRUCTOR'S CONTACT INFORMATION:

Dr. Melissa R. Wuellner, Associate Professor

Office: BHS 345

Office hours: Mondays and Wednesdays: 1:30 – 2:30 pm; Tuesdays: 1:00 – 2:00 pm (***Note that these are the best times to get in contact with me during the week, but other times may be available to fit with your schedule.*)

Office phone: (308) 865-8006

Email: wuellnermr@unk.edu or through Canvas

COURSE DESCRIPTION:

This course was developed to provide a thorough examination of the interactions between abiotic and biotic components of freshwater ecosystems incorporating both theoretical and applied aspects of aquatic food web management. Major themes of the course will include nutrient cycling, trophic state and eutrophication, predation and food webs, and fisheries ecology. Selected scientific literature and text readings will stress professional differences of opinion during discussion of topics, which is intended to guide students toward an understanding that ecological principles rarely are simple and that current dogma can at times be incorrect or incomplete. Finally, this course is directed at improving student communication (written and electronic information/technology based) and critical thinking skills.

STUDENT LEARNING OUTCOMES:

By the end of this course, students should be able to:

- 1) Describe the cycling of important nutrients in aquatic ecosystems.
- 2) Link abiotic factors to biotic processes (e.g., nutrient and energy cycling) in aquatic food webs.
- 3) Describe several approaches to understanding trophic dynamics in aquatic food webs.
- 4) Describe how conservation and management actions (or inactions) may influence nutrient and energy cycling in aquatic ecosystems.

PREREQUISITES:

There are no formal prerequisites for this course but this course is only open to those who are enrolled at UNK as graduate students.

INSTRUCTIONAL METHOD:

This course is presented entirely online; therefore, good time management and self-study skills are critical to your success! Extra effort is often required in an online course compared to the classroom-based version because most of the work rests on your shoulders. You will be required to read or view the assigned materials (including the short lecture videos) each week. Most weeks include at least one discussion. Weekly course updates and reminders will be provided via the "Announcements" feature in Canvas. Communication with the instructor can be by phone, e-mail, or in person. You are encouraged to use all three as frequently as needed.

You will be evaluated on your ability to critically evaluate, reflect on, integrate, and apply course information various assessments, including (but not limited to) regular discussions, assignments, and exams. You are welcomed to work with or share thoughts about your various assignments with your classmates, but you will be required to write and submit your own original material.

COURSE REQUIREMENTS:

Students are required to complete all assigned readings, view all presentations, and contribute to all discussions as scheduled. All assessments must be submitted by the assigned due dates. Students should make the effort to log into the class throughout the week, even if it's just a "quick check" of the discussions or announcements, rather than just on one or two days each week.

MISSED ASSIGNMENTS/QUIZZES/EXAMS AND MAKE-UP POLICY:

Any and all discussions, assignments, and or other assessments in this class **MUST** be submitted by the designated deadline (see course calendar below) unless you and I have discussed otherwise. If you do not have an approved absence, you will receive a zero on that assignment. Please note that computer emergencies (e.g., hard drive crashed, etc.) are **NOT** considered an excuse. You should always have an alternative means of accessing or submitting electronic information and course work. If you have an emergency (e.g., illness, death in the family, etc.), please contact me no later than 36 hours after the missed deadline to make new arrangements.

REQUIRED MATERIALS:

All required readings will be provided on Canvas. There is no single textbook to purchase as I will be drawing from many textbooks, journal articles, and potentially other readings to illustrate the concepts of this course. Students will be selecting peer-reviewed articles to present and discuss as well. If you are interested in purchasing any of the textbooks referenced in class for the future, please let me know and I can provide more information.

For research resources, please be sure to use your local university library as well as online search engines (e.g., Google Scholar) as you will likely need to access older articles that may or may not be available online. Remember that the UNK Library has a ton of great resources that are accessible to distance students through electronic access to journals or Interlibrary Loan! Visit <https://library.unk.edu/> for more information.

UNIVERSITY POLICIES RELATED TO COVID-19:

The university community is deeply concerned for the well-being of its students, faculty, and staff. Keeping each other as safe as possible will require commitment from each of us; failure to do so will literally place lives in danger. The full policy relating to mitigation of the spread of infectious diseases can be found at <https://www.unk.edu/coronavirus/>. Policies that apply to all courses (online, remote, blended, or face-to-face) include:

- Students shall monitor their health daily. No student shall attend classes in person while sick. Those who have had contact with positive-tested individuals or show COVID-19 related symptoms must have clearance from the Public Health Center prior to returning to face-to-face classes. There will be no penalties for missing classes for COVID-19 related absences. Students will still be responsible for course content through alternative attendance or other options arranged with the instructor.

Additional policies specific to face-to-face instruction include the following:

1. During Phases I and II, all students are required to wear masks that cover the nose and mouth at all times during class and at any time, inside or outside, where physical distancing of at least 6' is not possible. Instructors shall maintain 16' of distance from students while lecturing but may be closer, if masked. Instructors have the authority

- to direct students who refuse to wear masks to leave the classroom. Students who have medical issues that make masks inadvisable should contact Disability Services for Students at 308-865-8214 to request an exemption.
2. Students shall not arrive for class more than 5 minutes before the scheduled start time for the course. Instructors shall dismiss students promptly at the end time and all shall leave the classroom promptly. Students who have questions should use office hours rather than before/after class times.
 3. Instructors and students should clean their desks prior to class. Cleaning materials will be provided.
 4. Additional requirements for Phase III, for specialty courses such as labs or performing arts, or for experiential learning are detailed below.
 - a. Because this is an online course, there are no additional requirements for Phase III at this time. If you do come to campus for another class or any other reason, please review the related policies for that course or any additional campus guidelines prior to coming to campus.

Questions regarding COVID-19 should be directed to the Public Health Center unkhealth@unk.edu or 308-865-8254. Questions regarding the COVID-19 academic policy should be directed to Sr. Vice Chancellor Bicak at bicakc@unk.edu. Questions regarding department specific requirements should be directed to the chair of the relevant department. The chair for the Department of Biology is Dr. Julie Shaffer. She may be contacted via email at shafferjj@unk.edu or by phone at 308-865-8661.

WHAT HAPPENS IF UNK GOES REMOTE?

It is possible that on-campus classes could move to remote delivery at any time during this semester. However, that move does not affect our class because we are already online. That's great because it will hopefully mean little to no disruption during our time together! ☺ The course schedule will proceed as noted in the syllabus, regardless of whether the UNK campus is open or closed.

GRADING POLICY: Below is a roughly estimated breakdown of the assignments and points for this course. Please note that these points may be subject to change but that those changes will be communicated with you in a timely fashion. Grades will be entered in Canvas so you should be aware of where you stand throughout the semester.

Grade Item	Points
Introductory Video	10
Weekly Discussions (Contributing; 18 discussions x 25 points each)	250
Discussion Leading (1 discussion x 60 points each)	60
Exams (2 exams x 100 points each)	200
Other Assignments	225
TOTAL	745

Grades in this class will be assigned according to the standard scoring system described below. Only by attaining these percentages can you be assured of receiving a desired grade.

A+	97 – 100%	A	94 – 96 %	A-	90 – 93%
B+	87 – 89%	B	84 – 86%	B-	80 – 83%
C+	77 – 79%	C	74 – 76%	C-	70 – 73%
D+	67 – 69 %	D	66 – 64%	D-	60 – 63%
		F	< 60%		

Please note: If your final grade is within 0.5% of the next highest grade, your grade will be rounded up (e.g., an 89.50% will be considered an "A-"). This is the definitive cutoff for rounding grades. There will be no exceptions to this policy.

COURSE CALENDAR: This is a *tentative* course schedule. If changes are made to the schedule, the class will be notified. Check the assignment directions, the Canvas calendar, and the “Announcements” page for due dates for discussions, assignments, and exams. **All times listed are for Central Time Zone. Please adjust according to your time zone (i.e., 11:59 pm Central is 10:59 pm Mountain).** *Please note that this schedule is subject to revision as necessary. Changes to the schedule will be communicated in a timely fashion.*

Week	Dates	Unit(s)	Readings	Discussions	Assignments
1	1/24 – 1/30	Welcome!	None	Post personal introduction (<i>due 1/30 by 11:59 pm</i>)	Sign up for Student-led Discussions (<i>due 1/30 by 11:59 pm</i>)
2	1/31 – 2/6	Bottom-up Processes	Properties of Water (Dodds 2002) Nutrients in Water (sections of Chapter 15 by Cole 1994)	Instructor-led discussion #1 (<i>1st post due 2/2 by 11:59 pm; 2nd post due by 2/6 by 11:59 pm</i>)	Demonstrating the Properties of Water at Home (<i>due 2/6 by 11:59 pm</i>)
3	2/7 – 2/13	Bottom-up Processes: Lentic Systems	Density, Layering, and Lake Classification (Chapter 10 by Cole 1994) Trophic Relationships in Pelagic Ecosystems (McQueen et al. 1986)	Student-led Discussion #1 (<i>see Student-led Discussion General Directions for days which leader and participants need to post</i>)	None
4	2/14 – 2/20	Bottom-up Processes: Lotic Systems	River Continuum Concept (Vannote et al. 1980) River Continuum Critique (Statzner and Hignier 1985) Riverine Productivity Model (Thorpe and DeLong 1994) Flood Pulse Concept (Junk et al. 1989)	Student-led Discussion #2 (<i>see Student-led Discussion General Directions for days which leader and participants need to post</i>)	What if...? Scenario Assignment #1 (<i>due 2/20 by 11:59 pm</i>)

Week	Dates	Unit(s)	Readings	Discussions	Assignments
5	2/21 – 2/27	Linking Abiotic and Biotic Processes	Ecosystems, Energy, and Production (Chapter 5 by Cole 1994) Nutrient Cycling by Animals in Freshwater (Vanni 2002)	Student-led Discussion #3 (see <i>Student-led Discussion General Directions for days which leader and participants need to post</i>)	None
6	2/28 – 3/6	Exam #1 (due by 11:59 pm on Sunday, March 6)			
7	3/7 – 3/13	Approaches to Understanding Trophic Dynamics: Food Habits Studies	Selections from Chapter 16 (Garvey and Chipps 2012) Chapter 11 (Chipps and Garvey 2007)	Student-led Discussions #4 and 5 (see <i>Student-led Discussion General Directions for days which leader and participants need to post</i>)	Analysing and Interpreting Food Habits Data (due 3/13 by 11:59 pm)
8	3/14 – 3/20	SPRING BREAK			
9	3/21 – 3/27	Approaches to Understanding Trophic Dynamics: Bioenergetics Modelling (Part I)	Deslauriers et al. (2017) Deslauriers and Breck (2017)	Student-led Discussions #6 and 7 (see <i>Student-led Discussion General Directions for days which leader and participants need to post</i>)	Begin “Working with Bioenergetics Models” (due 4/3 by 11:59 pm)
10	3/28 – 4/3	Approaches to Understanding Trophic Dynamics: Bioenergetics Modelling (Part II)	None	None	Complete “Working with Bioenergetics Models” (due 4/3 by 11:59 pm)
11	4/4 – 4/10	Approaches to Understanding Trophic Dynamics: Stable Isotope Analyses	Selections from Chapter 16 (Garvey and Chipps 2012) Galster et al. (2012)	Student-led Discussions #8 and 9 (see <i>Student-led Discussion General Directions for days which leader and participants need to post</i>)	None

Week	Dates	Unit(s)	Readings	Discussions	Assignments
12	4/11 – 4/17	Trophic Ecology in Action: Eutrophication	Basic Concepts of Eutrophication (Sawyer 1966) Limnological Changes Associated with Reservoir Aging (Kimmel and Groeger 1986)	Student-led Discussions #10 and 11 (<i>see Student-led Discussion General Directions for days which leader and participants need to post</i>)	None
13	4/18 – 4/24	Trophic Ecology in Action: Alternative Stable States	Alternative Stable States (Scheffer 1989)	Student-led Discussions #12 and 13 (<i>see Student-led Discussion General Directions for days which leader and participants need to post</i>)	What if...? Scenario Assignment #2 (<i>due 4/24 by 11:59 pm</i>)
14	4/25 – 5/1	Trophic Ecology in Action: Prey Stocking	Ney (1981) Vanni et al. (2006)	Student-led Discussions #14 and 15 (<i>see Student-led Discussion General Directions for days which leader and participants need to post</i>)	None
15	5/2 – 5/8	Trophic Ecology in Action: Predator Stocking	Seda et al. (2000)	Student-led Discussions #16 and 17 (<i>see Student-led Discussion General Directions for days which leader and participants need to post</i>)	Question: Is it better to stock predators or prey? (<i>due 5/8 by 11:59 pm</i>)
17	FINAL EXAM (100 points) – Due by 11:59 pm on Thursday, May 12				

PLAGIARISM:

Plagiarism is defined as using more than four consecutive words from a source without a citation. You may not use another's words directly without putting them within quotations. It is also plagiarism when either an author's ideas or organization of concepts are used without giving a citation. We expect you to use references for assignments given in this course and we expect you to cite your sources. Students caught plagiarizing will receive a failing grade for the assignment and will face additional punishments up to expulsion as outlined by University policy. I invite you to visit the online resource <http://www.plagiarism.org/> to make sure you understand what plagiarism is and how to avoid it.

STUDENTS WITH DISABILITIES:

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students (DSS) office, 175 Memorial Student Affairs Building, 308-865-8214 or by email unkdso@unk.edu.

STUDENTS WHO ARE PREGNANT:

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To receive accommodation services due to pregnancy, students must contact Cindy Ference in Student Health, 308-865-8219. The following link provides information for students and faculty regarding pregnancy rights. <http://www.nwlc.org/resource/pregnant-and-parenting-students-rights-faqs-college-and-graduate-students>.

UNK STATEMENT OF DIVERSITY & INCLUSION:

UNK stands in solidarity and unity with our students of color, our Latinx and international students, our LGBTQIA+ students and students from other marginalized groups in opposition to racism and prejudice in any form, wherever it may exist. It is the job of institutions of higher education, indeed their duty, to provide a haven for the safe and meaningful exchange of ideas and to support peaceful disagreement and discussion. In our classes, we strive to maintain a positive learning environment based upon open communication and mutual respect. UNK does not discriminate on the basis of race, color, national origin, age, religion, sex, gender, sexual orientation, disability or political affiliation. Respect for the diversity of our backgrounds and varied life experiences is essential to learning from our similarities as well as our differences. The following link provides resources and other information regarding D&I: <https://www.unk.edu/about/equity-access-diversity.php>.

REPORTING STUDENT SEXUAL HARASSMENT, SEXUAL VIOLENCE OR SEXUAL ASSAULT:

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

Local Domestic Violence, Sexual Assault Advocacy Agency: 308-237-2599

Campus Police (or Security): 308-865-8911

Title IX Coordinator: 308-865-8655

Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

VETERANS' SERVICES:

UNK works diligently to support UNK's military community by providing military and veteran students and families with resources and services to help them succeed. Veterans Services assists with the GI Bill process and acts as a liaison between the student and the Veterans Administration. If you need assistance or would like more information, please contact Lori Weed Skarka at 308-865-8677 or unkveterans@unk.edu.