

Course Syllabus

BIOLOGY 884
FRESHWATER MANAGEMENT TECHNIQUES
Fall 2024

Instructors

Dr. Keith Koupal
Office: NGPC
Phone: 308 865-5326
Office Hours: 9:00A-10:00 Monday and Thursday

Course Content:

The goal of this course is to provide an introduction to both freshwater ecosystems and fishery management. Freshwater is among the scarcest commodities on the planet and freshwater ecosystems are among the most impacted. Many techniques exist for assessing freshwater impacts including chemical measures and biotic indices. These assays lend themselves readily to application in the science classroom and for small scale ecological projects. In addition to their value ecologically as indicator species, fish continue to provide critical protein to much of the world's population. The demand for fish is expected to increase by a staggering 75% in the next twenty years. Thus, an important focus of this course is to examine techniques for managing fish populations.

Course Goals:

1. Students will understand freshwater management as a process with recognizable phases.
2. Students will effectively consider the multiple dimensions (ecological, social, and institutional) of freshwater resources management.
3. Students will learn to analyze a freshwater management problem using multiple techniques, suggest explicit alternative management approaches, and identify potential consequences of those approaches.
4. Students will become familiar with current issues in freshwater resources management.
5. Students will develop knowledge of methods for sampling fish and taking measurements to assess their health.
6. Students will gain insights into steps necessary to manage freshwater systems.

Required Text:

Zale, A. V., D. L. Parrish, and T. M. Sutton, editors. 2012. Fisheries techniques, third edition. American Fisheries Society, Bethesda, Maryland. ISBN 978-1-934874-29-5

Grades and Grading

1	Water Report	75
1	Invertebrate Report	75
1	Biodiversity Written Assignment	50
1	Class Discussion Participation	75
	Final Exam	150

Total semester points= 425

Letter grades will be assigned based on a scale no harsher than straight percentages of 100-98% A +, 97-93% A, 92-90% A -, 89-88% B+, 87-83 B, 82-80% B-, 79-78% C+, 77-73% C, 72-70% C-, 69-68% D+, 67-63%D, 62-60% D-, below 59% F. However, I reserve the right to use a more lenient grading scale.

Tentative Schedule

Week	Lecture #	Topic	Reading or (Assignment)
8/26	0	Course introduction and expectations	
	1	Freshwater as a resource	
	2	Threats to freshwater ecosystems	*(Local H2O)
9/2	3	No Class Labor Day	
9/9	4	Lake and lake formation	Ch. 4 pp 101-113
	5	Streams, rivers and wetlands	
	5	Reservoirs	
9/16	6	Care and handling of collected organisms/safety	Ch. 5 pp 163-192; 209-215
	7	Invertebrate sampling	Ch. 2 pp 15-28 read for report support Ch. 10 pp 453-502
	8	Statistics/interpreting and sharing data	*(Invert Sampling Report)
9/23	9	Brandi Flyer – Hydrologist	
	10	Aquatic nuisance species/Lake Future	Future of Lakes
	11	Sampling/research in action (abiotic/biotic)	
9/30	12	Angler assessment I - Keith Hurley	Ch. 21 pp 963-1003
	13	Angler assessment II - Keith Hurley	
	14	Surveying Anglers	
10/7	15	Fish population and planning	Ch. 1 pp 1-13
	16	Fish management tools	
	17	Sampling fish eggs and larvae	Ch. 9 pp 363-394

10/14	18	Gill nets, trap nets and seines (I)	Ch. 6 pp 223-253
	19	Gill nets trap nets and seines (II)	Ch. 7 pp 267-300
	20	Electrofishing	Ch. 8 pp 320-354
10/21		NO CLASS – Fall Break	Report Data Collected
10/28	21	Marine and Microchemistry – Mark Kaemingk	
	22	Age and growth	Ch. 15 pp 677-721
	23	Food habits	Ch. 16 pp 733-772
11/4	24	Bioenergetics	
	25	Length/weight indices	Ch. 14 pp 637-668
	26	Mark/tagging studies	Ch. 11 pp 521-563
11/11	27	Integrated management of linear systems (Schumann)	Ch. 13 pp 608-630
	28	Biodiversity discussion	Winter and Hughes
	29	Hydroacoustics	*(Biodiversity Assignment)
11/18	30	Entrainment/fidelity	
	31	Student Presentations	
	32	Student Presentations (Continued)	
11/25	33	Platte River recovery program – Chad Smith	
	34	Aquatic habitat management	
	35	Discussion on dams	
12/2	36	Pallid sturgeon recovery – Gerald Mestl	
	37	Aquatic education concepts	Koupal and Krasny
	38	Economic impact	
12/9	39	Conflict resolution – Jeff Runge	*(Take home final)
	40	Biotic index vs. model	Schnute and Richards
	41	Take Home Test Prep/Final Thoughts	Index Koupal

“*” in assignment column denotes an assignment will be provided at that time

Note: Final exam will be of a take-home test nature and be available around Dec 1st. The exam will be due by Dec. 18, 2024 by 11:59 PM Central Standard Time.

All late assignments are subject to a deduction of 5% per day.

Discussion

Discussion period will be from Tuesday of the week through the next Monday. To receive full discussion credit you are anticipated to have multiple communications with substance, one of which needs to directly respond or address the topic, questions, or

assignment provided each week. Points can be deducted for the original post occurring too late in the week, all communication within too narrow of a timeframe, not fulfilling requested responses or failure to make adequate discussion contributions. Discussions will periodically be graded and any points deducted will be explained by comments in the grade response. There are a total of 14 discussion weeks and I will include a 15th discussion opportunity that will relate to report of personal water conservation efforts (it will make sense when you see it). If you have questions about discussion participation, make sure you send me an email for clarification.

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. We invite you to visit the online resource <http://www.plagiarism.org/> to make sure you understand what plagiarism is and how to avoid it.

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Course Policies and Resources

All students at the University of Nebraska Kearney should be aware of the following university-wide course policies and resources.

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Attendance Policy

Your instructor may have indicated on their syllabus an attendance policy specific to their class. If so, that is the policy with which you must comply. If no other policy is stated, the University-wide attendance policy will apply.

[Undergraduate Student Attendance Policy](#)

[Graduate Student Attendance Policy](#)

Academic Honesty Policy

Academic honesty is essential to the existence and integrity of an institution of higher education. The responsibility for maintaining that integrity is shared by all members of the academic community. To further serve this end, the University of Nebraska at Kearney has a policy relating to academic integrity.

Undergraduate Academic Integrity Policy

Graduate Academic Integrity Policy

Finals Week Policy

Finals at UNK will be scheduled Monday through Thursday during the last week of the semester.

- 1. Final examinations for full semester classes are to be given at the regularly scheduled examination time only as published on the Office of the University Registrar website policy ([Final Exam Schedule](#)).**
- 2. During the week prior to Finals Week, the only examinations that may be given are laboratory practical examinations, make-up or repeat examinations, and self-paced examinations.**
- 3. If a student is scheduled to take three or more final exams in one day during the finals week, the student has the following options take all final exams as scheduled; take the exam during the allotted day and time that is open for make-up examination or resolution of conflict, which is Thursday at 3:30 pm; or take the exam during Finals Week at an agreed-upon time worked out between the student and the instructor. Students seeking accommodation are responsible for notifying their instructor at least one week before the final exam period and providing documentation proving eligibility for accommodation.**
- 4. Projects, papers, performances, and speeches scheduled for completion during the last week of classes must have been assigned in writing by the end of the eighth week of the semester. This refers to the project and its scope, not the topic.**
- 5. Complaints about failure to follow the above outlined procedures should be made immediately to the faculty member. If the faculty member is not responsive to the student's concerns, the appropriate department chair should be notified. If necessary, appeals can be filed with the dean of the college offering the course.**

6. Any course not having an examination during Finals Week will meet under the direction of its instructor during the scheduled Finals Week time period for a continuation of regular class work.
7. The dean may grant exceptions to this policy on the basis of good and sufficient reasons submitted to the dean in writing.
8. Faculty should include a Finals Week Policy statement indicating that “The final exam will be administered in the time period scheduled during finals week in accordance with University policy ([Final Exam Schedule](#)).”

Mental Wellness

The UNK Counseling Center provides mental health services to support the academic success of students. The Counseling Center provides a full range of short-term professional mental health services.

Getting help is a smart and courageous thing to do. Contact the UNK Counseling Center at 308-865-8248 or visit their website for more information:

https://www.unk.edu/offices/counseling_healthcare/counseling_care/index.php

Military and Veteran Services

Military and Veteran Services assist veterans, service members, and their dependents with education benefits and academic and supporting resources. They serve as a liaison between students and the Veterans Administration and branches of the military. Contact the UNK Military and Veteran Services office at 308-865-8677 or visit their website for more information:

https://www.unk.edu/offices/financial_aid/veterans_services/index.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), to take appropriate action to prevent a recurrence of such sexual misconduct, and to protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes they 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.

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 the Student Health office at 308-865-8218. The following links provide information for students and faculty regarding pregnancy rights. <https://thepregnantscholar.org/title-ix-basics/>

<https://nwlc.org/resource/faq-pregnant-and-parenting-college-graduate-students-rights/>

UNK Policy for Inclusive Excellence

At UNK, inclusive excellence is rooted in our values.

- **People matter. The diversity of our students, faculty and staff is essential to our educational mission. Our backgrounds, identities, and lived experiences enrich our learning community.**
- **The learning environment matters. We are committed to an inclusive and equitable student-centered learning environment. In our classrooms we exchange ideas and opinions with respect for one another.**
- **Learning matters. Preparing students to value critical thinking, mutual respect, and open communication is essential for lifelong**

learning. We are building a community that protects and fosters intellectual inquiry and embraces diverse perspectives.

The following link provides information for students regarding UNK's commitment to inclusive excellence and procedures for improving classroom experience with inclusion and belonging:
<https://www.unk.edu/about/dei/inclusive-excellence-in-the-classroom.php>.