

Course Syllabus

BIOLOGY 884
FRESHWATER MANAGEMENT TECHNIQUES
Fall 2022

Instructors

Dr. Keith Koupal
Office: NGPC
Phone: 308 865-5326
Office Hours: 11:00-12:00 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

2	Reports (75 each)	150
1	Diversity Assignment (75 each)	75
1	Student Presentation	75
	Final Exam	150

Total semester points= 525

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)
8/22	0	Course introduction and expectations	
	1	Freshwater as a resource	
	2	Threats to freshwater ecosystems	*(Local H2O)
8/29	3	Lakes and lake formation	
	4	Streams, rivers and wetlands	Ch. 4 pp 101-113
	5	Reservoirs	
9/5		Class Project Re-Coop Time	
9/12	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)
9/19	9	Water Management – Cory Steinke	
	10	Aquatic nuisance species/Lake Future	Future of Lakes
	11	Sampling/research in action (abiotic/biotic)	
9/26	12	Angler assessment I - Keith Hurley	Ch. 21 pp 963-1003
	13	Angler assessment II - Keith Hurley	
	14	Surveying Anglers	
10/3	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

10/10	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
10/17		NO CLASS – Fall Break	
10/24	21	Marine and Microchemistry – Mark Kaemingk	
	22	Age and growth	Ch. 15 pp 677-721
	23	Food habits	Ch. 16 pp 733-772
10/31	24	Bioenergetics	
	25	Length/weight indices	Ch. 14 pp 637-668
	26	Mark/tagging studies	Ch. 11 pp 521-563
11/7	27	Integrated management of linear systems (Schumann)	Ch. 13 pp 608-630
	28	Biodiversity discussion	Winter and Hughes
	29	Hydroacoustics	*(Biodiversity)
11/14	30	Entrainment/fidelity	
	31	Student Presentations	
	32	Student Presentations (Continued)	
11/21	33	Platte River recovery program – Malinda Henry	
	34	Aquatic habitat management	
	35	Discussion on dams	
11/28	36	Sampling the Lower Platte – Jenna Ruoss	
	37	Aquatic education concepts	Koupal and Krasny
	38	Economic impact	
12/5	39	Missouri River Sampling – Kirk Steffensen	*(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. 14, 2022 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. I anticipate taped lectures becoming available for viewing on Tuesday each week as they are being taped Monday evenings, so we will keep the discussion week similar. 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 15 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.

[Home](#) » [Academic Affairs](#) » [Academic Affairs Forms](#) » [Course Policies and Resources](#)

Course Policies and Resources

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

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. You can find the [Student Attendance Policy Statement online](#).

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. To ensure all students understand the expectations, UNK has adopted [Academic Integrity Policy](#).

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.

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 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>