

BIOL 432 – Fisheries Management (2,3) 3 cr.

Fall 2011

Prerequisites: BIOL280 (Biostatistics), BIOL333 (Fish Ecology), BIOL345 (Limnology).

Instructor: Dr. Geoffrey B. Steinhart, Assistant Professor
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Office Hours: Monday 1 - 4 PM and Tuesday and Thursday 10:30 - noon. Please feel free to stop by my office anytime. Other meeting times can be arranged as needed.

Meeting Times: Lecture: 9:30-10:20 AM, Tuesday and Thursday, 258 Crawford Hall
Lab: 2:00-4:50 PM, Tuesday, 258 Crawford Hall or ARL

Required Text: Fisheries Techniques, Second Edition (FT) by B. R. Murphy and D.W. Willis

Recommended Text: A supplementary text that is good for fish managers is Inland Fisheries Management in North America, 3rd Edition (IFM) by Hubert and Quist. Copies of all texts will be on reserve at the LSSU library. Lecture readings not in these books will be available on the course web site.

Course Description: A course covering the history, theory and practice of fisheries management with an emphasis on basic strategies used in effective management of fish populations in freshwater ecosystems. Students will learn methods of collection and synthesis of data regarding fish population dynamics and manipulation, habitat modification, and human management to achieve specific fisheries management goals and objectives.

Course Goals: Students will study how biotic and abiotic factors influence fisheries, learn methods of fish collection and assessment, gain experience with quantitative analysis of fisheries data, and learn the principles of fisheries management.

Course Objectives:

1. Learn the history and process of fisheries management (assessment: exams, management plans)
2. Be comfortable with fisheries assessment and management techniques (assessment: field trips, homework, management plans)
3. Improve quantitative skills necessary for fisheries research (assessment: homework, exams)
4. Provide an understanding of fish responses to environmental changes (assessment: exams, management plans, book report)
5. Sharpen critical thinking, written and oral communication, and professional skills related to fisheries resources and management (assessment: book report, management plans, final exam)

Participation and Conduct:

Learning is an active process, so participation is very important for your success in this course. Attendance is mandatory for all scheduled periods and **I expect to be notified in advance if you are unable to attend a class.** You will be graded on your participation (100 points, 10% of your grade), so speak up, be courteous, and be active. I want the class to be an open forum for discussion and learning: ask questions! Be critical evaluating what you hear and read, but be polite with your response. Students

are expected to treat all students and lecturers with respect. **Mobile phones cannot be used in class without permission.**

Key assignments:

Book Review (50 pts.): You will select and read a popular book on fish or fisheries. The book must contain information relevant to fisheries management. You will provide a 10 to 15 min. oral presentation on the book's topic. **Your presentation must focus on the fisheries management issues** raised in the book (e.g., history of the fishery and/or management, methods, ecology of the organism, human dimensions). Your presentation need not use visuals (board or computer), but some information might best be shown with images (e.g., maps, techniques, etc.). Start reading your book early and take notes!

Fisheries Management Project (180 pts.): This major project will involve collecting and analyzing data from a local lake or stream. As a group, you will plan sampling, collect data (with help from the class), analyze the data, and develop a management plan. Each person will individually write a management report from the data. You will turn in complete data analyses (50 pts.), a draft of your paper (25 pts.), give peer-reviews (25 pts.) and revise your final plan (100 pts.). In addition, each group will present their management plan in a mock stakeholder meeting (30 pts.). Grading and format is discussed in instructions available on the course web site.

Grading:

Grades will be scored without curving as:

100 > A+ ≥ 98	90 > B+ ≥ 88	80 > C+ ≥ 78	70 > D ≥ 60
98 > A ≥ 92	88 > B ≥ 82	78 > C ≥ 72	60 > F
92 > A- ≥ 90	82 > B- ≥ 80	72 > C- ≥ 70	

All written and lab assignments are due at the start of the period. If you cannot take an exam or turn in an assignment on time because of illness or emergency, it is your responsibility to contact me as soon as possible: except for unusual circumstances, I expect to be notified before the exam or due date. **Late assignments will be docked 10% of the point value for each late day, except at my discretion when there is a documented reason for the medical or personal emergency.**

The Americans with Disabilities Act & Accommodations:

In compliance with Lake Superior State University policy and equal access laws, disability-related accommodations or services are available to students with disabilities. Students who desire such services should meet with professors in a timely manner, preferably during the first week of class, to discuss disability-related needs. Students are eligible to receive services after they are registered with Disability Services. Proper registration allows Disability Services to verify the disability and determine individual reasonable academic accommodations. Disability Service is located in the KJS Library Room 103, 906-635-2355 (from on campus - 2355).

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss specific needs.

IPASS (Individual Plan for Academic Student Success):

If at mid-term your grades reflect that you are at risk for failing some or all of your classes, you will be contacted by a representative of IPASS. The IPASS program is designed to help you gain control over your learning through pro-active communication and goal-setting, the development of intentional learning skills and study habits, and personal accountability. IPASS is located in the KJS Library, Room 106, (906) 635-2887 or x2294 on campus, or email ipass@lssu.edu if you would like to sign up early in the semester or if you have any questions or concerns.

Honor Pledge:

As a student of Lake Superior State University, you have pledged to support the Student Honor Code of the College of Engineering & Technology. You will refrain from any form of academic dishonesty or deception such as cheating, stealing, plagiarism or lying on take-home assignments, homework, computer programs, lab reports, quizzes, tests or exams which are Honor Code violations. Furthermore, you understand and accept the potential consequences of punishable behavior.

Assignments and due dates

Due date	Assignment	Point value
Sep. 13	Sampling bias case study response	20
Sep. 27	Lab problem set 1 (size and condition)	50
Oct. 4	Lab problem set 2 (mortality estimation)	50
Oct. 13	Lecture exam midterm	100
Oct. 18	Lab problem set 3 (population estimation)	50
Nov. 8	Data analysis for management plan	50
Nov. 15	Lab problem set 4 (age and growth)	50
Nov. 22	Rough draft of management plan	25
Nov. 29	Management plan peer review	25
Dec. 6	Final fisheries management plan	100
Dec. 8	Fisheries management plan presentation	30
TBD	Book review presentations	50
Dec. 15	Final exam	100
All term	Class participation	100
TOTAL		800

Tentative Laboratory Outline

Date	Topic/Activity	Location	Lab Homework
Aug. 30	Fisheries sampling (Case 20)	Crawford	
Sep. 11-13	Soldier Lake sampling trip	ARL	
Sep. 20	Size and condition (Case 14)	Crawford	
Sep. 23-25	HSC Sampling trip	ARL	Prepare sample gear
Sep. 27	Mortality estimation	Crawford	Size and condition
Oct. 4	Pendills Creek sampling trip	Crawford	Mortality estimation
Oct. 11	Population estimation	Crawford	
Oct. 18	Age and growth I, data analysis	Crawford	Population estimation
Oct. 25	Data analysis	Crawford	
Nov. 1	Data analysis	Crawford	
Nov. 8	Age and growth II	ARL	
Nov. 15	Age and growth III	Crawford	Age and growth
Nov. 22	Communication and peer-review	Crawford	
Nov. 29	Book presentations (last chance)	Crawford	
Dec. 6	Presentation work day	Crawford	

Tentative Lecture Outline

Topic	Date	Readings
Introduction and course description	Aug. 30	Ch. 1, 6, 7 and p. 35-41
FISHERIES ASSESSMENT & ANALYSIS		
Process of fisheries management	Sep. 1	Process
Sampling bias case study	Sep. 8	Case 16 + supplemental readings
Population assessment	Sep. 13	
Tagging techniques	Sep. 15	Ch. 15
Individual metrics	Sep. 20	Ch. 12
Population metrics	Sep. 22	p. 230-253 and 238-251
Community metrics	Sep. 27	Mortality
Harvest metrics	Sep. 29	p. 467-475
Stock-recruit dynamics	Oct. 4	
Stock-recruit dynamics	Oct. 6	
Lake Mendota biomanipulation project	Oct. 11	Lake Mendota paper
Lecture exam 1	Oct. 13	
FISHERIES AND HABITAT MANAGEMENT		
Lake management - general	Oct. 18	
Lake management - development	Oct. 20	Schindler et al. 2000
Lake management - vegetation	Oct. 25	Olson et al. 1998
Stream and river management	Oct. 27	
Managing with regulations	Nov. 1	Case 4
Managing with regulations	Nov. 3	Case 9
Managing with regulations	Nov. 8	Case 12
Stocking for fisheries management	Nov. 10	
Stocking for fisheries management	Nov. 15	Case 11 + supplemental readings
Introduced and undesirable species	Nov. 17	p. 303-310 and 326-328
Endangered species management	Nov. 22	George et al. 2009
Practice plan presentations	Nov. 29	
Non-intuitive responses	Dec. 1	Pine et al. 2009
Human dimensions of fisheries management	Dec. 6	
Management Plan presentations	Dec. 8	
Final exam	Dec. 15	7:30-9:30 AM