

WATER 483/683
FISHERIES RESEARCH
FALL SEMESTER 2007, 3 CREDITS

Instructor: Michael J. Hansen

Office: 174 CNR

Office Hours: posted on my office door

Office Phone: 715/346-3420

Classroom: 361 CNR

Lectures: Monday and Wednesday 9:00-9:50

Lab: Wednesday 14:00-15:50

Objectives: The course will introduce students to the scientific research process, including: formulating a hypothesis, designing and conducting a study, writing a scientific paper, giving an oral presentation, and providing an oral defense of the project. The student will become familiar with principles of what makes an hypothesis testable, how to design a study to address the hypothesis, the strengths and weaknesses of most common fish sampling gears, how to organize and write a scientific paper, and how to plan, deliver, and defend a scientific presentation.

Textbook: Murphy, Brian, and David Willis, editors. 1996. Fisheries Techniques, Second Edition. American Fisheries Society, Bethesda, Maryland.

Format: The two weekly lectures will cover a variety of topics on fisheries research methods. The weekly lab periods will provide practical exercises on the lecture subjects and will also be used for working on the class project. The class project will include laboratory and statistical analysis of a real fishery research problem, a written report, an oral presentation, and an oral defense. Fishery data for the class project should be obtained in the previous summer as part of summer employment or internship. The written report will conform to the Guide for Authors for the North American Journal of Fisheries Management. The oral presentation will conform to standards for presentations at annual meetings of the American Fisheries Society. The oral defense will mimic a thesis defense.

Grading: Assignments will not be accepted if they are turned in after the due date, other than for extenuating circumstances such as a family or health emergency. Final grades for the course will be awarded as follows: A = 93%; A- = 90%; B+ = 85%; B = 80%; B- = 75%; C+ = 70%; C = 65%; C- = 60%; D+ = 55%; D = 50%; F = <50%. The final class grade will be weighted according as below:

40% Written Report—the written report will be graded on its completeness of thought, clarity of writing, organization, appropriateness of experimental design and data analysis, interpretation of results, depth of discussion, and use of literature. The report will be returned to the student in fully edited form for use in preparing future written reports.

30% Oral Presentation—the oral presentation will be graded on organization, clarity of visual aids, verbal presentation, and length. A critique will be

returned to the student for use in preparing future oral presentations.

- 20% Weekly Assignments—a series of exercises related to each weekly lecture topic is intended to provide practical experience in the use and interpretation of fishery statistics. Each exercise involves a simple mathematical problem and several interpretive questions. Ten of the weekly exercises will count toward this portion of the grade.
- 10% Oral Defense—each student will provide an oral defense of their project during the week of final exams. The defense will be one hour in length and will mimic a thesis defense. The oral defense will be graded as either pass or fail, as is true of a thesis defense.

Schedule: The schedule below identifies subjects to be covered in the two weekly lectures (each lecture topic is shown in italics), followed by the topic of the exercise to be covered during the lab period. The weekly lab periods will also be devoted to working on projects. Readings from the textbook provide background for the lectures and should be read before the lecture on that subject. Sections of the written project report will be turned in, beginning in the ninth week, so you need to invest time during the first eight weeks working on your project. Sections of the written report will be edited and returned within one week, for use in preparing the final report. Oral presentations that summarize the class project and that include visual aids will be given during the final two weeks of class. Oral defenses of the project research will be conducted during the week of final exams.

Dates: Lectures/Lab Topics: Textbook Readings and Assignments:

Sep 5	<i>No class</i> <i>Lab: No class but complete Lab Assignment 1 by next week!</i>	
Sep 10–12	The Research Process: <i>Seven Steps to Research</i> <i>Writing a Scientific Paper</i> <i>Presenting and Defending Results</i> Lab: Introduce Class Projects and Discuss Lab Assignment 1 (Seven Research Steps)	<i>1. Planning for Sampling</i>
Sep 17–19	Mathematical Modeling <i>Stating Hypotheses</i> <i>Designing Experiments</i> <i>Collecting and Analyzing Data</i> Lab Assignment 2 (Scientific Debate)	<i>2. Data Management and Statistical Techniques</i>
Sep 24–26	<i>No class</i> <i>Lab: No class but complete Lab Assignments 3 and 4 by next week!</i>	
Oct 1–3	Fishing Methods: <i>Passive Fishing Gears</i> <i>Active Fishing Gears</i> Lab Assignments 3 (Selectivity) and 4 (Catchability)	<i>6. Passive Capture Techniques</i> <i>7. Active Fish Capture Methods</i>
Oct 8–10	Electrofishing Methods:	<i>8. Electrofishing</i>

	<i>Boom shockers</i>	
	<i>Backpack shockers</i>	
	Lab Assignment 5 (Mortality)	
Oct 15–17	Mark-Recapture Methods: <i>Tagging and Marking</i> <i>Radio-Tagging</i>	<i>12. Tagging and Marking</i> <i>19. Advances in Underwater Biotelemetry</i>
	Lab Assignment 6 (Abundance)	
Oct 22–24	No class	
	Lab: No class but complete Lab Assignments 7 and 8 by next week!	
Oct 29–31	Length, Weight and Age Methods: <i>Size Structure</i> <i>Body Condition</i> <i>Growth</i>	<i>15. Length, Weight, and Associated ... Indices</i> <i>16. Determination of Age and Growth</i> Introduction for Report Due
	Lab Assignments 7 (Size Structure) and 8 (Condition)	
Nov 5–7	Diet Analysis Methods: <i>Stomach Samples</i> <i>Selection and Overlap Indices</i>	<i>17. Quantitative Description of the Diet</i> <i>11. Invertebrates</i> Methods for Report Due
	Lab Assignment 9 (Growth)	
Nov 12–14	Bioenergetics Model: <i>Theory and Applications</i>	Results for Report Due
	Lab: Bioenergetics Model (Dr. Charles P. Madenjian)	
Nov 19–21	Creel Survey Methods: <i>Effort and Catch Rate</i> <i>Catch and Harvest</i>	<i>20. Sampling the Recreational Creel</i> Discussion for Report Due
	Lab: No class – work independently on class projects and oral presentations	
Nov 26–28	Commercial Survey Methods: <i>Catch and Effort</i> <i>Catch Rates and By-Catch</i>	<i>21. Commercial Fisheries Surveys</i>
	Lab: No class – work independently on class projects and oral presentations	
Dec 3–5	No class: Finalize class projects	Final Draft of Report Due
Dec 10–12	Oral Presentations	
Dec 19–21	Oral Defenses	
