

**WATER 784**  
**ADVANCED STUDIES IN FISHERIES MANAGEMENT**  
**FALL SEMESTER 2020, 3 CREDITS**

*Instructor:* Daniel Isermann  
*Office:* 163 CNR

*Lectures:* Tuesday, Thursday, Friday 10-10:50 (TNR 352)

*Objectives:* At the completion of the course, students will be able to: (1) understand and employ field and analytical techniques commonly used to assess fish populations; (2) develop an age-structured model to evaluate the effects of fishing mortality rates under different harvest regulations; (2) prepare a fishery management plan and informational documents intended for the general public; (4) prepare to interview for a fishery manager position with a state agency.

*Textbooks:* No specific textbooks will be used.

*Format:* Three weekly lectures will cover fisheries management topics, with a primary focus on commonly used indices and associated analytical techniques, including the use of age-structured models. Additional readings will be provided as needed. There will be mid-term and final exams, as well as several homework assignments. Each student will also complete a fishery management plan for an individual species of fish, which will include the use of an age-structured model to assess the effects of different harvest regulations. Students will also complete a mock interview for an entry-level fisheries management position within a state agency.

*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 emergencies. Final grades for the course will be awarded using the following minimum values: A = 93%; A- = 90%; B+ = 87%; B = 83%; B- = 80%; C+ = 77%; C = 73%; C- = 70%; D+ = 67%; D = 60%; F = <60%. The final class grade will be based on the following:

100 points     *Management plans:* will be graded on inclusion of necessary components, clarity of writing, organization, appropriateness of experimental design and data analysis, interpretation of results, and strength of management recommendations.

100 points     *Homework assignments:* 4-5 assignments focused on course topics. These will be assigned and discussed during the semester.

100 points     *Mid-Term Exam:* details of the exam will be discussed in class.

100 points     *Classroom Lecture on Assigned Topic:* Students will provide a classroom lecture on a topic related to their research. More details in provided in class.

100 points     *Final Exam: comprehensive,* details will be discussed in class.

100 Points     *Interview:* student will be interviewed by a panel of experts and graded on performance. Interview will be like those conducted for entry-level fishery management biologists.

## Schedule

<b>Date</b>	<b>Topic with Required Readings and Assignment Due Dates</b>
Sept 3	Introduction to Fisheries Management-Duties of a Fish Manager
Sept 4	Overfishing and Effects of Exploitation [ <b>Readings 1 and 2 and Sullivan 2003</b> ]
Sept 8	Metric-Based Fisheries Management and Reference Points ( <b>Readings 3 and 4</b> )
Sept 10	Sampling Considerations: Catchability and Selectivity ( <b>Reading 5, section 1.7 in Ricker</b> )
Sept 11	Sampling Considerations: Gear Choice ( <b>Management System Assignment is due</b> )
Sept 15	Sampling Considerations: Power Analysis and Sample Allocation ( <b>Reading 6</b> )
Sept 17	Grants and Budgets
Sept 18	Relative Abundance: Use of CPE Data, Indexing Recruitment
Sept 22	Factors Affecting Recruitment Variation ( <b>Readings 7 and 8</b> )
Sept 24	Effects of Recruitment Variation [ <b>Readings 9 and 10</b> ]
Sept 25	Size Structure and Condition [ <b>Reading 11, Swingle</b> ] ( <b>Yellow Recruitment Index Assignment is Due</b> )
Sept 29	Estimation of Age and Growth: Sampling [ <b>Readings 12 and 13</b> ]
Oct 1	Estimation of Age and Growth- von Bertalanffy model [ <b>read section 9.6 in Ricker and Ogle vignette</b> ]
Oct 2	Introduction to Management Plans and Assignment ( <b>review example plans</b> )
Oct 6	Estimating Mortality [ <b>read pages 8-11 and 29-46 in Ricker; Readings 14 and 15</b> ]
Oct 8	Estimating Fishing Mortality/Exploitation [ <b>Readings 16 and 17</b> ]
Oct 9	Mark-Recapture Review [ <b>Readings 18 and 19; section 3.9 in Ricker</b> ] ( <b>Pre-Proposal and Budget Assignment is Due</b> )
Oct 13	Using Mark Recapture to Estimate Growth and Mortality
Oct 15	Writing for the Public
Oct 16	Harvest Regulations
Oct 20	Simple Yield-Per-Recruit and Dynamic Pool Models ( <i>read section 10.5 in Ricker</i> )
Oct 22	Writing an abstract
Oct 23	<b>Mid-Term Exam</b>
Oct 27	Building a Simple Age-Structured Model in Excel
Oct 29	Statistical Review (t-tests, ANOVA, correlation, regression, chi-square) [ <b>Reading 20</b> ]
Oct 30	Statistical Review (t-tests, ANOVA, correlation, regression, chi-square) ( <b>Writing for the Public Assignment is Due</b> )

Nov 3	Creel Surveys [ <b>Reading 21- Creel Book Chapter</b> ]
Nov 5	Forage Fish/Shad [ <b>Readings 22 and 23</b> ]
Nov 6	Interview Preparation: Guidelines and Advice
Nov 10	Discussion Forum: Catch and Release Mortality ( <b>Age Structured Model is Due</b> )
Nov 12	FAMS
Nov 13	Genetic Stock Concept in Fisheries Management [ <b>Reading 24</b> ]
Nov 17	Stocking and evaluations [ <b>Reading 25</b> ]
Nov 19	Discussion Forum: How to Evaluate Stream Habitat Modifications
Nov 20	No Class
Nov 24	Managing Mixed Fisheries- Ceded Territory Walleye and Lake Michigan Whitefish
Dec 1	Krebs in class lecture
Dec 3	Sikora in class lecture
Dec 4	Shrovnal in class lecture <b>(Management Plans are Due)</b>
Dec 8	Brandt in class lecture
Dec 10	Simmons in class lecture
Dec 11	Class review
Dec 14-18	Final Exam and Mock Interviews