WATER 784
ADVANCED STUDIES IN FISHERIES MANAGEMENT
FALL SEMESTER 2022, 3 CREDITS

Instructor: Daniel Isermann
Office: 163 CNR
Office hours: Open-door policy or by appointment

Lectures: Monday, Tuesday, Thursday 11-11:50 (TNR 351)

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	*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

Date	Topic with Required Readings and Assignment Due Dates
Sept 6	Introduction to Fisheries Management-Duties of a Fish Manager **[Reading 1]**
Sept 8	Overfishing and Effects of Exploitation **[Readings 2 and 3]**
Sept 12	Metric-Based Fisheries Management and Reference Points **(Readings 4 and 5)**
Sept 13	Sampling Considerations: Catchability and Selectivity **(Reading 6, section 1.7 in Ricker)**
Sept 15	No class- WICFRU Coordinating Meeting
Sept 19	Sampling Considerations: Gear Choice **(Bass Regulations Assignment Due)**
Sept 20	Sampling Considerations: Sample Allocation **(Reading 7)**
Sept 22	Grants, Budgets, and Project Planning
Sept 26	Use of CPE Data, Indexing Recruitment **[Reading 8, pp 113-121 and Reading 9)**
Sept 27	Factors Affecting Recruitment Variation **[Readings 10, 11, 12]**
Sept 29	Effects of Recruitment Variation [**Readings 13 and 14]**
Oct 3	Size Structure and Condition **[Readings 15 and 16] (Largemouth Bass Recruitment Index Assignment is Due)**
Oct 4	Estimation of Age and Growth: Sampling **[Readings 17 and 18]**
Oct 6	Estimation of Age and Growth- von Bertalanffy model **[read section 9.6 in Ricker, Ogle vignette, Reading 19]**
Oct 10	Introduction to Management Plan Assignment
Oct 11	Estimating Mortality **[read pages 8-11 and 29-46 in Ricker; Readings 20 and 21]**
Oct 13	Estimating Fishing Mortality/Exploitation **[Readings 22, 23, 24]**
Oct 17	Mark-Recapture Review **[Readings 25 and 26; section 3.9 in Ricker] (Pre-Proposal and Budget Assignment is Due)**
Oct 18	Using Mark Recapture to Estimate Growth and Mortality **[Readings 27 and 28]**
Oct 20	Writing for the Public
Oct 24	Harvest Regulations **[Readings 29, 30, 31]**
Oct 25	Harvest Regulations **[Readings 32 and 33)**
Oct 27	Simple Yield-Per-Recruit and Dynamic Pool Models **(read section 10.5 in Ricker)**
Oct 31	**Mid-Term Exam**
Nov 1	Building a Simple Age-Structured Model in Excel
Nov 3	Statistical Review (t-tests, ANOVA, correlation, regression, chi-square) **[Reading 34]**

Nov 7	Statistical Review (t-tests, ANOVA, correlation, regression, chi-square) **(Writing for the Public Assignment is Due)**
Nov 8	Discussion Forum: Catch and Release Mortality **[Readings 35, 36, 37]**
Nov 10	Genetic Stock Concept in Fisheries Management **[Reading 38]**
Nov 14	Stocking and evaluations **[Reading 39, 40, 41]**
Nov 15	Forage Fish/Shad **[Readings 42 and 43]**
Nov 17	FAMS
Nov 21	FAMS/Q + A about walleye population models
Nov 22	Stream Trout Management **[Readings 44 and 45]**
Nov 24	No Class-Thanksgiving
Nov 28	Interview Preparation: Guidelines and Advice **(Age Structured Model is Due)**
Nov 29	Creel Surveys **[Reading 46- Creel Book Chapter]**
Dec 1	Alternative Methods for Estimating Angler Effort **[Readings 47 and 48]**
Dec 5	Managing Harvest of Lake Whitefish in Lake Michigan- Scott Hansen, WDNR **[Readings 49 and 50]**
Dec 6	Managing Mixed Fisheries: Ceded Territory Walleye- Tom Cichosz and Joe Hennessy, WDNR **[Readings 51 and 52]**
Dec 8	Life and Times of a New Biologist- Eric Wegleitner, WDNR
Dec 12	Discussion Forum: Evaluating Habitat Modifications
Dec 13	Using Telemetry and PITs to Address Management Questions **[Readings 53 and 54]**
Dec 15	Class review **(Management Plans are Due)**
Dec 19-21	Final Exam and Mock Interviews