

WILD 408 Advanced Fisheries Spring 2016

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Office hours: Wednesday 2-3pm, Thursday 2-3 pm, or by appointment

Course description:

Fisheries management consists of three interrelated processes: fish populations, fish habitat, and people. This course introduces some of the fundamental principles and approaches of inland fisheries ecology and management. Through general readings and specific case studies we will explore the challenges of balancing multiple human values in managing fisheries resources. We will focus on understanding

1. The drivers of change in fish populations,
2. Quantitative nature of fish population assessment,
3. Fish habitat requirements, impacts, and restoration,
4. Harvest and other social/economic value of fisheries,
5. Complexity of ecological interactions linking fish to other components of aquatic ecosystems and broader social community.

This course, in combination with 2 others, fulfills the upper division writing requirement for Wildlife Biology majors. The UM upper-division writing requirement includes:

- (1) Identify and pursue more sophisticated questions for academic inquiry, (2) Find, evaluate, analyze, and synthesize information effectively from diverse sources, (3) Manage multiple perspectives as appropriate, (4) Recognize the purposes and needs of discipline-specific audiences and adopt the academic voice necessary for the chosen discipline, (5) Use multiple drafts, revision, and editing in conducting inquiry and preparing written work, (6) Follow the conventions of citation, documentation, and formal presentation appropriate to that discipline, and (7) Develop competence in information technology and digital literacy.

Textbook:

Hubert and Quist (eds). 2010. Inland Fisheries Management in North America. American Fisheries Society. 3rd edition. American Fisheries Society, Bethesda, Maryland.

You can buy this book through AFS (with member discount) or several copies will be on reserve in the library so you can check out for a short time period to read any assigned readings from that book. Some of these chapters and all of the additional readings are posted on the Moodle site in pdf format.

Grading policy

Proposal

Short paragraph of idea due on March 16th, Full proposal due April 22nd, Panel discussion on April 29th, and Revision due May 12th (exam week)

Paragraph of idea should include a description of the general issue/s, specific questions to be addressed, where study may take place, and what type of methods may you use to address the questions.

Proposals (15% of your grade) should be no longer than ten pages, including figures, tables, and a brief resume of the principal investigator. The following information must be provided: (a) Principal Investigator name & affiliation; (b) Title of project; (c) Description of project: this section should include a brief

introduction to the problem, your specific objectives, your study plan; (d) Expected benefit/results of project to fish management; (e) Proposed project schedule and timeframe (not longer than 2 years for the entire project); (f) Biographical information. Each person must provide a brief resume summarizing his/her qualifications and experience; (g) Budget Table (no more than \$75,000 for the two years), you need to include salary (# people, # days, hourly pay), fringe (13% of salary for people you employ less than 6 months, 30% of salary for people you employ for longer), supplies needed to perform the project, travel (\$0.42/mile and any per diem), equipment use or rental (boat days, etc), and equipment repair. Turn in 3 copies of your proposal.

Reviewing 2 proposals will be an assignment. Proposals will be evaluated on organization, writing, scientific/technical merit, feasibility, and benefits to fisheries management. Review sheets will be provided. Students will have a week to complete the review and turn it in at the panel discussion evaluating which proposals will be funded. I will also comment on drafts for the final version. *The proposal grades are based on the grading rubric not on whether your proposal gets funded.*

Assignments (60%)

Computational and written assignments will be passed out in class throughout the semester. Computational assignments will be associated with each case study. There are multiple assignments (as listed in syllabus). Students are free to discuss thoughts, approaches, and results, but all components of the written assignment must be prepared individually and be their own work. *All written material, calculations and graphs to be handed in must be your own work (answers must be in your own words). If you plagiarize, you will get a zero for the assignment. A second infraction will result in failing the course. A 5% per day late penalty will be assessed unless prior arrangements are made.*

Participation and Discussions (15%)

Come to class with readings complete and ready to participate in class (10%). We are recruiting a few local biologists associated with case studies to speak to the class and the Student Chapter of the AFS (Thursday 6pm), attendance at these few talks are mandatory unless you are excused ahead of time.

- Ron Pierce, MFWP fisheries biologist: Feb 25th on Fisheries Issues in Blackfoot River Basin
- Leo Rosenthal MFWP fisheries biologist: March 24th on Lake Trout Suppression in Swan Lake
- I have requested tour of Arlee Hatchery Wednesday early afternoon either April 27th or May 4th (we would leave at noon, it would take several hours; ½ hour away)

Professional and Scientific Exposure (5%): You will have a choice to participate in multiple potential activities this spring. To get full points you will have to do **one** of the following:

- 1) Go to the MTAFS meetings. **To get credit for this activity**, talk to a professional about their work and job, and be in talks for one entire session or half-day (for documentation write up a short description of who you interacted with and about what (1 sentence) and describe 3 talks that you attended: objective, approach, findings, implications). Turn it in the week following the meetings. [Montana AFS Annual Chapter Meeting](#)
- 2) Go to 3 public seminars related to aquatic issues (AFS Chapter sponsored talks that are not required for class, job interview aquatic talks, WBIO, IoE, DECS, or OBE seminars), or public meetings associated with MFWP aquatic issues. Please get approval ahead of time to be sure these will count. To document this activity, you must write 1 short paragraph summarizing each seminar (objective, approach, findings, and implications) or for a public meeting (summary of issue, concerns by citizens, next step in process). Turn it in **within 1 week** of the seminar or meeting. As seminar schedules are completed, I will try to announce them in class. *Do not wait until the last week of the semester*; you will need to make progress on this throughout the semester.

Final Exam (10%):

The final exam for this course will review the major concepts that were covered during the entire semester. **Final Exam is Monday May 9th 10:10-12:10.** I will make previous final exams available as a study guide.

Course Calendar:

Dates	Topic	Reading	Assignments
Jan 25 - 29	Class introduction		
	History of inland fisheries management	Chapter 1 in Inland Fisheries Management	Assignment 1: Due for in class discussion. Feb 3rd . Essay: Ethical issues associated with fisheries, research, and management?
	Legal Processes and Law	Chapter 4 in Inland Fisheries Management	
Feb 1 - 5	Process of fisheries management		Assignment 2. Essay: Where is your fish from? Due Feb 8th
	<i>Ethics in fisheries - in class discussion:</i>	Ch 15. The Ethics of Exploitation and Intervention: Do We Have the Right? In Fish Conservation	
	Historical perspective in recreational fisheries? Issues with overexploitation?	Post et al. 2002	
Feb 8 - 12	<i>Where is your fish from? - in class discussion of assignment</i>		Assignment 3. Review of Management Plan Assignment. Due Feb 23rd
	Coldwater streams and a hierarchical approach to fish habitats and populations	Ch 3. Inland Fisheries Management; Rieman and Dunham 2000	
Feb 15-19-	HOLIDAY and MT AFS Meetings	NO CLASS	
Feb 23-26	Stream Restoration	Roni et al. 2002	
	Blackfoot Case study: Restoration	Pierce et al. 2013 & MFWP Blackfoot management plan	Assignment 4. Blackfoot Restoration Assignment: Due March 4th
	General design issues, habitat & population measures for assessment in streams and rivers	Ch 18 Design and analysis for monitoring & Ch 1 in Fisheries Techniques. Sampling	Readings are for reference to help with proposal study design, etc.

Dates	Topic	Reading	Assignments
		Considerations Ch 11 Methods for Assessing Fish Populations	
Feb 29- Mar 4	Climate change and western riverscapes	Isaak et al 2012	
	Warming rivers and interactions with fisheries?	Chris Clancy	
	Introduction to population models for management.	Chapter 7: population projection models & Age-based matrix models	Assignment 5: Should we change fishing regulations for WCT in the Bitterroot River? Due Mar 11th
Mar 7-11	Population models continued		
	Discuss proposal ideas, what is in a proposal?		Assignment 6. Paragraph for Proposal Due Mar16th
	Exotics and the special case of hybrids	Allendorf et al. 2001	
Mar 14-18	Harvest as an option to alter fish communities	Paul et al. 2003	
	Management and Ecology of Lake Food webs	Ch 15 Inland Fisheries Management	
	Case Study: Flathead Lake	Ellis et al. 2011	
Mar 21-25	Creel Surveys	Ch 21 Sampling the recreational fishery	
	Deriving demographic parameters	Ch 2 Inland Fisheries Management p 43- 55	Assignment 7: Demographic Estimation Assignment Due Apr 13th
Mar 28- Apr 1	Population modeling of Flathead Lake	Population Modeling Appendix of EIS Lake Trout Suppression for Flathead Lake	Assignment 8. Lake Trout Population Model: What can we achieve? Due Apr 18th
	Population modeling of Flathead Lake		
	What to do about new invasions? Prevention? Early Action?		
Apr 4- 8	SPRING BREAK		
April 11-15	<i>In class discussion: Invasive species what can we achieve? Assignment</i>		

Dates	Topic	Reading	Assignments
	<i>review</i>		
	River Ecology and Threats	Ch 20: Inland Fisheries Management	Proposal Due April 22nd
	River fisheries and anadromous fishes limiting factors set-up		
April 18-22	River fisheries and anadromous fishes		
	Limiting factors for anadromous fishes		Assignment 9: Reviews due April 29th
	<i>In Class Discussion: Proposal Reviews and funding vote</i>		
April 25-29	<i>Complexities in anadromous fisheries management</i>		
	The use of cultured fish in conservation and management	Ch 9: Inland Fisheries Management	
May 2 - 6	<i>In Class debate: Stocking for enhancement? Assisted migration into Wilderness Areas? GMO fish? Class choice.</i>		Assignment 10: One page position paper for debate.
	Final Class: wrap up and exam review		
Monday May 9 th	FINAL EXAM 10:10-noon		
			Proposal Revision Due May 12th

Please be aware of UM policies:

Students with Disabilities Statement

- [UM's Disability Services for Students Office](#) and [EO/AA office](#) request you consider adding one of the following two statements to your course syllabi:
 - Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications.
- Please work with the instructor to provide reasonable modifications on the first day of class.

Student Conduct Code Statement

- All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

Important Dates Restricting Opportunities to Drop a Course Spring 2016:

Date	Action	Date
To 15 th instructional day	Students can drop classes on Cyberbear with refund	February 12 = last day
16 th to 45 th instructional day	A class drop requires a form with instructor and advisor signature, a \$10 fee from registrar's office, student will receive a 'W' on transcript, no refund.	February 13 through March 28
Beginning 46 th instructional day	Students are only allowed to drop a class under very limited and unusual circumstances. Not doing well in the class, deciding you are concerned about how the class grade might affect your GPA, deciding you did not want to take the class after all, and similar reasons are not among those limited and unusual circumstances. If you want to drop the class for these sorts of reasons, make sure you do so by the end of the 45 th instructional day of the semester. Requests to drop must be signed by the instructor, advisor, and Associate Dean and a \$10 fee applies.	March 29 - May 6

Class Attendance Policies

Students are expected to attend all class meetings and complete all assignments for courses in which they are enrolled. Instructors may excuse brief and occasional absences for reasons of illness, injury, family emergency, religious observance or participation in a University sponsored activity. (University sponsored activities include for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) Instructors shall excuse absences for reasons of military service or mandatory public service.