

FISH 210: Research Methods in Aquatic and Fishery Sciences

<http://fish.washington.edu/classes/fish210/>

Professor

Tim Essington
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Office Hours
Tuesday, 10:00 – 11:00
Friday, 11:30 – 12:20
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Teaching Assistants

Bridget Ferriss
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12:00; Wednesday, 1:00 – 1:45

MEETING TIMES

Lecture: M-W-F 10:30 – 11:20

Section A Monday 1:30 – 4:20 FTR 124, Thursday 12:30 – 1:50, FISH 213

Section B Tuesday 1:30 – 4:20 FTR 124; Thursday 10:30 – 11:50, FISH 136 & 213

COURSE OBJECTIVES

By the end of this course, you will be able to:

- (1) Differentiate science from other ways of reaching understanding of the world around us.
- (2) Identify the alternative scientific approaches used in aquatic and fishery sciences, and explain the strengths and weaknesses of each
- (3) Develop and evaluate effective experimental and sampling designs
- (4) Perform fundamental manipulations of data and appropriate statistical analyses
- (5) Critically evaluate scientific research
- (6) Clearly present results of scientific research as a well-organized and well-written scientific paper.

COURSE COMPONENTS

Lectures (M, W): These will provide background and conceptual material for each course topic.

Labs (M, W): Labs are designed to give you hands-on experience conducting research. Most labs will include an assignment for homework.

Discussions (*Th*). Discussion sections will be a mix of application of lecture and lab topics, including computer exercises and tutorials.

Lecture (F). Friday lecture meetings will be a mix of discussions / conversations about fish and fisheries sciences, summary of term paper assignments, review for exams, or occasionally additional lecture when we have a short week (due to holidays or exams).

ASSIGNMENTS AND EXAMINATIONS

Term Paper

Learning how to effectively communicate is an essential part of the scientific process. This course will emphasize scientific writing skills through the writing and revision of a scientific research paper. This paper will involve the analysis and interpretation of data collected by the entire class, as well as reviewing scientific literature, constructing appropriate tables and figures, following appropriate writing style and organization. Figures and tables are due **Nov 4**. The first draft of your term paper is due on **Nov 23**, and the final revised draft is due on **Dec. 11**.

Exams: There will one mid-term exam given in class on **Nov. 2**, which will cover all material presented in class (lab and lecture) through Oct 30. The final exam will be given on **Dec. 14**, and will cover all course material, but material from the second half of the course will be emphasized.

Labs and Discussions: Each lab / discussion assignment is due the following meeting period. You are responsible for downloading, printing out, and reading the lab handouts prior to your lab section. All lab handouts can be downloaded from the web page <http://fish.washington.edu/classes/fish210/>

We cannot permit make-up labs. Recognizing that occasional unavoidable crises may arise, you may miss one lab due to illness or other emergency without penalty. Your point total for that lab will be set equal to your average lab write-up score from the remaining labs.

Your lab grade will be based on the percent of possible points achieved (not the total number of points).

Readings : No textbook is required for this course. There will be some required readings for select Friday discussion sections. Optional readings will be made available to you throughout the course.

GRADING BREAKDOWN

		Grade Point	Points
Mid Term Exam	100		
Final Exam	100	4.0	475
Paper Figures/ Tables	50	3.5	448
Paper 1 st Draft	75	3.0	422
Paper Revision	75	2.5	395
Lab Assignments	100	2.0	369
		1.5	342
TOTAL	500	1.0	316

*Final grade point = 0.01886 x Points – 4.957

Course Schedule

Week	Date	Lecture Topic	Lab	Discussion	Friday
1	30-Sep	Introduction to FISH 210	No Lab	Animal Care (Rm 136)	What is Science?
2	5-Oct	Scientific Toolbox I and II	<i>Piper Creek Field Trip</i>	Introduction to Excel: Data manipulation (Rm 136) (5pt)	Advocacy and Science
3	Oc 12	Getting the data: experimental and sampling designs	Puget Sound Fish ID (5 pt)	Introduction to Excel: Creating Effective Figures(Rm 136) (5pt)	Field Trip Preview
	17 - 18 Oct	<i>PUGET SOUND TRAWLING</i>			
4	19-Oct	Statistical Inference	Insect ID and enumeration (5 pt)	Statistical Analysis of Data (Rm 136) (5pt)	Term Paper Instructions and Tips
5	26-Oct	Bestiary of sampling methods	Writing scientific papers	Mock Mid Term Exam (Rm 213)	Mid term Review Session
6	2-Nov	MID TERM EXAM; Analysis of Animal Behavior	<i>Cedar River Field Trip</i> (5 pt)	Literature Search (Rm 136)	Lecture: Analysis of Animal Behavior II. Return Mid term
7	9-Nov	Environmental Toxicology	Microbiology I	Return Table and Figures (Rm 136)	Environmental Toxicology
8	16-Nov	Ecosystem Ecology	Microbiology II (10 pt)	Microbiology Data Analysis (Rm 136)	Ocean Acidification
9	23-Nov	Concepts of animal growth	Aging Otoliths (5 pt)	THANKSGIVING	THANKSGIVING
10	30-Nov	Population Estimation	Mark Recapture (5 pt)	Depletion estimation) (Rm 136) (5 pt)	Tuna Wars: what does CPUE mean anyways?
11	7-Dec	Estimation, modeling and fisheries management	No Lab	Mock final exam (Rm 213)	Final Exam Review
	14-Dec	Final Exam: 8:30 – 9:30 a.m.			

PUGET SOUND FIELD TRIP

Your term paper will be based upon data collected during an optional field trip trawling at Meadow Point, during the weekend of Oct. 17th-18th. You will have an opportunity to sign up for one of 6 three-hour time slots, during which you will collect and process samples and record data for the entire class.

OTHER COURSE POLICIES

- All assignments are due at the beginning of class on the date specified in the schedule.
- *Late assignments will be penalized in 10% increments for each additional day late* (e.g., 3 days late = 30% automatic deduction, besides content reductions). We are looking to see how well students master the material in the time allotted. In fairness, we cannot give equivalent grades to students that are afforded different amounts of time to master the material.
- Due to the nature of most of the lab exercises, make-up labs cannot be offered. If you are unable to attend a particular lab, you cannot receive credit for that (even the write-up portion).
- Make-up exams will not be offered.
- If you would like to contest the grading on an assignment or exam, you may submit a written statement explaining why you feel an error was made.
- Academic Integrity: Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. It is **your responsibility** to *know and follow* University's policies on cheating and plagiarism. Any suspected cases academic misconduct will be handled according to University regulations. Information, including definitions and examples of academic misconduct, found at <http://depts.washington.edu/grading/issue1/honesty.htm>.

ANIMAL CARE CERTIFICATION IS REQUIRED FOR LABS INVOLVING THE HANDLING OF LIVE VERTEBRATES. YOU **MUST** COMPLETE CERTIFICATION AND SUBMIT OCCUPATIONAL SAFETY AND HEALTH QUESTIONARE PRIOR TO THE FIRST FIELD TRIP

University of Washington: Animal Use Laws & Regulations Training

All students, staff, or faculty working with vertebrates in any way must complete the module entitled "University of Washington: Animal Use Laws and Regulations Training". That is the only module you are required to complete. In the "University of Washington: Animal Use Laws and Regulations Training" module, only Chapters 1-13 and 25-27 are required. Other chapters should only be completed if they are relevant to your work.

Once you complete the training and obtain your Certificate of Completion please keep a hard copy of the certificate on file. You will need to produce it for the Instructor or TA of each course that has a vertebrate component. Please keep in mind that the exam will take you at least one hour to complete and must be finished in one sitting because you will be logged out if you leave your terminal for extended periods of time. If you do not pass the exam with a 100% you will be given the correct answers to the questions you missed and will be required to retake the exam.

The University of Washington's new Animal Use Training website is now available at the following web address: <http://depts.washington.edu/auts>. Online courses that were previously housed at the AALAS Learning Library and Research Training are available at the new site. All user accounts from the AALAS Learning Library and Research Training have also been transferred over. Training requirements, class schedules, required forms, and course materials can be accessed at the new Animal Use Training website as well.

Here are some basic instructions for using the new site:

To complete online courses: (i.e. Laws and Regulations, SPF, online mouse and rat)

1. Click "Courses" from the menu on the left of the screen
2. Choose "Online Courses" at the top of the page.
3. Click on "Click here to Complete Online Courses"
4. Select "Web Courses and Exams"
5. Choose "Click here if you are a new user and have not been through the registration process before"
6. Enter a username and password and click "continue"
7. On the following page select "University of Washington" and click "I have selected my institution"
8. Fill out the user information. You can use the SAFS UW box number 355020.
9. On the following page, select "courses Menu"
10. Go through the course "University of Washington: Animal Use Laws and Regulations Training"
11. Once completed, take the web Exam.
12. When you successfully completed the exam, print out the certificate page indicating that you have completed the training.

School of Aquatic and Fishery Sciences Course Policies

Academic Integrity:

Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples of Academic Misconduct, can be found at: <http://depts.washington.edu/grading/issue1/honesty.htm>

Disability Accommodations:

To request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, (206)543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability which requires academic accommodations, please present the letter to the instructor so we can discuss the accommodations needed for this class.

Field Trip Insurance:

Field Trip insurance is strongly recommended for all students registered in any SAFS course which includes field trips. Students who do not have the regular University insurance or adequate personal coverage should consider obtaining a special short-term policy at \$0.85 per day for the course of the field trips. Information and applications are available on pages 27-29 at:

<http://f2.washington.edu/treasury/riskmgmt/insure/fieldtrip>