

## FW 370: Design of Fish and Wildlife Projects – Spring 2020



### Meeting time

Tuesday & Thursday 10:00 – 11:40

### Locations

NR 243 (lectures/discussion and labs)

### Credits 3

#### Instructor

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Welcome to FW 370! For this learning experience to be a success, please review the syllabus thoroughly. For questions on the syllabus, please e-mail the course instructor.

### Course Description

The purpose of this course is to introduce you to the general principles of conducting research in fish, wildlife and conservation biology. The class will cover all phases of the scientific process, from generating hypotheses and study design, to data collection and analysis, interpretation and reporting of results. The course will emphasize philosophy and history of science, application of the scientific method in ecological research, preparation of research proposals, experimental design, data collection/analysis, scientific writing and scientific communication. These skills underpin modern natural resource management, and will increase competitiveness for those seeking careers in biological conservation, wildlife management, fisheries, etc. Individuals that have great difficulty with basic statistics and computing should not be discouraged, but will have to spend extra time and effort.

## Course Resources

### Textbook

- **Required:** Gotelli and Ellison (2013) A Primer of Ecological Statistics (Chapters on the tentative schedule refer to this book)
- **Recommended:** McMillan (2006) Writing Papers in the Biological Sciences

*Canvas.* All course materials will be posted on the Canvas. We will be using Canvas' Modules, Quiz, Assignment, and Announcement tools. The Discussion tool can be used amongst students to discuss course content, but **should not** be used to exchange results pertaining to lab assignments, quizzes, or exam.

*Software.* You will be using Microsoft Office (mainly word and excel) to complete your lab assignments, as well as R (<https://www.r-project.org/>) and RStudio (<https://rstudio.com/>) for programming purposes. Each student will be provided with a laptop computer loaded with R and RStudio during lab sessions.

## Course Activities

*Lectures.* Powerpoints covering key topics ~ 60 minutes in length. Topics will include 1) history and application of the scientific method to ecological problems, 2) experimental design, data collection, and statistical analysis in ecology, 3) scientific writing and communication.

*Readings.* Will be posted each week to deepen your understanding of topics presented in the lectures and labs. In addition to the assigned readings from Gotelli and Ellison, other reading materials will be posted, as necessary. Papers will emphasize philosophy of science, experimental design and the importance of using the scientific method in fishery and wildlife research. These papers will be available on Canvas. Reading materials should not be neglected since they will be used to design questions pertaining to assignments, quizzes, and the exam.

*Lab assignments.* Computer-oriented sessions designed to help practice quantitative topics presented in the lecture, namely statistical analysis. These labs will be graded individually and your answers should be submitted online through canvas.

*Quizzes.* You will be required to complete multiple online quizzes throughout the semester. These quizzes will consist of approximately 10 to 20 multiple-choice, fill-in-the-blank, matching and (or) true/false questions based on lectures, labs, and readings.

*Exam.* There will be one exam. It is designed to test your general knowledge of all topics covered in the class up to that point and will demand problem solving, short answers, and longer essays.

*Research proposal.* A research proposal describing a fish, wildlife or conservation biology investigation is required. Students will work in teams of 3 to develop the proposal. The proposal will include a comprehensive literature review, a statement of the hypothesis being tested, justification for the importance of conducting the proposed research, detailed methods including statistical analyses, expected results, and a budget. Examples of previous proposals and other information will be available on Canvas. You will be evaluated for your performance by the instructor and your team members. This "peer evaluation" accounts for 10% of the semester grade.

*Poster presentation.* During the second to the last week of class, each team will develop a poster presentation describing and defending their proposed research. Poster presentations are open to graduate students and faculty in the department. Up to 5 bonus points will be added to your

own poster grade, if you complete a peer evaluation of two other posters presented on the day when your team does not present your poster.

### Grading

Lab exercises (4).....	20%
Online Quizzes (4).....	10%
Exam (1).....	15%
Research proposal.....	55%
Team and topic.....	5%
Outline.....	10%
Poster presentation.....	10%
Final Proposal.....	20%
Peer evaluation of team members.....	10%

All lab assignments, poster and research proposal must be turned in on time for full credit. Please contact the instructor or teaching assistants when you need special accommodations. In case emergency in life happens and you miss a deadline, contact the instructor or teaching assistants at your earliest convenience to discuss make-up assignments. Late assignments will be docked 25% of the grade for each day late, and will no longer be accepted 3 business days past the deadline. Your grade will be calculated as follows:

GRADE	% RANGE	
	A+	100 %
A	< 96.67 %	to 93.33%
A-	< 93.33 %	to 90.0%
B+	< 90.0 %	to 86.67%
B	< 86.67 %	to 83.33%
B-	< 83.33 %	to 80.0%
C+	< 80.0 %	to 76.67%
C	< 76.67 %	to 70.0%
D	< 70.0 %	to 60.0%
F	< 60.0 %	to 0.0%

### Course Policy

*Feedback/Communication.* I will use the Announcements page in Canvas to communicate changes to the course and other information each week. You will receive specific feedback on your Assignments in the form of text comments appended to your electronic submissions.

*Syllabus Changes.* The syllabus is subject to change. Changes will be announced in class and on Canvas.

*Submitting Electronic Files.* Please name your assignment file using the following convention: labnumber\_yourname (e.g. lab1\_liseaubry).

## University Policy

*Accommodations.* Students who need accommodation in academic programs should contact the Office of Resources for Disabled Students, (970) 491-6385, to initiate the process. The website address is: Resources for Disabled Students: <http://www.rds.colostate.edu>. Please let the instructor know of any accommodation you may need to be successful in the course at the beginning of the semester.

*Ethics.* The course will adhere to

- CSU's Academic Integrity Policy:  
<http://catalog.colostate.edu/general-catalog/academic-standards/academic-policies/>
- the Student Conduct Code:  
<http://www.conflictresolution.colostate.edu/conduct-code>
- Violations will result in a grading penalty in this course and will be referred to the Office of Conflict Resolution and Student Conduct Services:  
<http://learning.colostate.edu/integrity/index.cfm>,  
[http://learning.colostate.edu/integrity/ways\\_to\\_avoid.cfm](http://learning.colostate.edu/integrity/ways_to_avoid.cfm)

*Classroom environment.* Discriminatory behavior related to a person's age, sex, gender identity, sexual orientation, race, ethnicity, national origin, creed, religion, or disability is unacceptable and will not be tolerated. Proper behavior for students prominently includes refraining from actions that disrupt class. Here are some useful resources to help identify and report such behaviors:  
<http://catalog.colostate.edu/general-catalog/policies/discrimination-harassment/>