

BIOL 354L

EXPERIMENTAL ECOLOGY

Meeting time: Wednesday 1:00-4:40 pm
Meeting place: LS-235 or the specified field location
Instructor: Francis Bozzolo
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Office Hours: By appointment

Course Description: This course is meant as an introduction to research and analysis methodology in ecology. As such, it is intended that students become familiar with research design, implementation, and analysis as applied to field ecology.

Course objectives: Students will:

- Gain exposure to ecological research methods
- Learn to pose ecological questions
- Learn to design & implement studies to answer ecological questions
- Gain experience reading, analyzing and discussing primary scientific literature
- Practice analyzing and interpreting ecological data
- Practice formal scientific writing

Prerequisites: Biology 354 or a similar course in ecological theory and principles must be taken prior or concurrently. Biology 215 or a similar course in statistical analytical techniques is highly recommended. Students who have not had these courses will find themselves at severe disadvantage.

Readings: There is no textbook for this course. Required readings from the primary literature will be posted on Blackboard or handed out in class. Articles should be read prior to the relevant class.

Recommended: "How to do Ecology: A Concise Handbook," Richard Karban and Mikaela Huntzinger, Princeton University Press, Princeton, NJ. 2006. A small but comprehensive primer on the fundamentals of ecological theory and practice, well written and largely free of jargon.

Attendance: Attendance is required for all lectures and field trips. Absences will be only be excused if a reasonable explanation is given; should the instructor request it, appropriate documentation will need to be provided to the instructor in a timely fashion. Classes will run for the entire class period; students should avoid scheduling appointments during this time. In the case of conflicts between the course and events such as official university events (e.g. participation in university sports), professional travel, or religious observances, the student must notify the instructor at the beginning of the semester or no less than two weeks prior to the conflicting dates, and receive the instructor's approval to be excused. Unexcused absences, tardiness and early departures will result in a reduction of participation points. Students with more than two unexcused absences will receive a failing grade in the course.

Make-up work and late assignments: Make-up work will only be permitted in the case of an excused absence or extreme extenuating circumstances, subject to approval by the instructor. The type of work

will be determined by the instructor depending on the missed class. Late assignments will lose 10% for each day they are past due, and will not be accepted more than three days past the date due.

Field trips: Because this class focuses on experimental ecology, we will be spending a considerable amount of time outside at the field sites. On these days we will not meet in the classroom, but at the locations specified on the course schedule. Students are responsible for arranging their own transportation to and from the field sites. All students are also required to sign a waiver prior to going into the field. Should any injuries occur, the student should immediately seek appropriate medical attention, and notify the instructor as soon as possible.

Students are encouraged to dress appropriately for the field. Often this consists of long pants and closed-toed shoes with decent traction. Students should also wear clothing they do not mind getting dirty. Depending on the weather, students should bring protection from the sun (hat, sunglasses, sun block), cold (warm clothing), or rain (waterproof clothing). For field trips to the sea shore, students should be prepared to wade knee-deep in the water and walk on wet, potentially slippery terrain. **Students should always bring water, writing materials, and the appropriate lab handout.**

Study reports: After each field study, students are expected to complete a written report. Reports should be 3-5 pages of text, plus title page (optional), references, figures and tables. Reports should be modeled after the literature read in class, and written in the formal scientific style. They should include introduction, methods and materials, results, and discussion sections. Students are encouraged to discuss the fieldwork, data analysis and interpretation, but reports must be written individually. See the handout for more detail.

Participation: Students are expected to participate in both the field studies and the classroom discussions. Separate participation points will be given for the field and classroom sections. Field participation primarily includes active involvement in data collection activities. Classroom participation primarily includes involvement in discussions (e.g., offering opinions and asking questions), input into data analysis and interpretation.

Independent project: Students will be responsible for designing, implementing and analyzing their own field study. At the end of the semester students will provide the instructor a written report, and will present their research to the class. Students are encouraged to work in pairs on the project, but may work independently if approved by the instructor. While each group will present their research jointly, each student must turn in their own written report. Independent projects must be approved by the instructor; students should plan to meet with the instructor as soon as possible, and no later than October 28.

Grading: Your grade will be based on lab reports from each of the experiments we conduct over the semester, class participation, quizzes and in-class activities, and one final presentation. You will be provided with instructions on how to write a lab report and how to put together your presentation. Your participation in all field trips and in-class activities makes up a significant portion of your grade. This includes being prepared for class/field activities ahead of time and being an active participant in class discussions and assignments. As most assignments will be returned to the student after grading, should the student request a reconsideration of a grade on any assignment, they will be responsible for maintaining and returning the original assignment with the instructor's comments. Quizzes and lab reports will be returned in no later than two weeks so that feedback may be incorporated for the next assignment.

Academic integrity: Cheating and plagiarism are not acceptable in class. Students caught cheating will be reported to the department and the university Center for Student Rights and Responsibilities. Depending on the severity and at the discretion of the instructor, students may receive a grade reduction or zero points for the or receive a failing grade in the class.

For more information on academic integrity and plagiarism, see:

2008-2009 General Catalog, page 453

http://coursecat.sdsu.edu/0809/webfolder/440-454_U_Policies.pdf#page=14

Center for Student Rights and Responsibilities

<http://csrr.sdsu.edu/conduct1.html>

Library Learning Packets

<http://infodome.sdsu.edu/infolit/learningpackets.shtml#plagiarism>

Instructional Technology Services

<http://its.sdsu.edu/tech/plagiarism/>

Help: If you are having trouble in the course please see the instructor as soon as possible. Attend office hours if necessary – these are provided for you to ask questions. The Biology Department Advising Office offers help with improving academic skills.

| Assignment | Points | % |
|-------------------------------------|---------------|-------------|
| Lab manuscripts (4, 50 points each) | 200 | 40% |
| Independent project | | |
| Research design & implementation | 50 | 10% |
| Manuscript | 75 | 15% |
| Quizzes (5, 5 points each) | 25 | 5% |
| Field participation | 50 | 10% |
| Classroom participation | 50 | 10% |
| Total | 500 | 100% |

Grades will be assigned using the following scheme:

90 – 100% A

80 – 90% B

70 – 80% C

Less than 70% is not considered a passing grade.

At the discretion of the instructor, the top and bottom 2% of each grade range may be graded as “+” and “-“. Although unlikely, the instructor reserves the right to curve or scale the grade distribution. Should curving occur, the minimum passing grade will never drop below 70%; additionally, grades will never be curved down.

Important Dates: September 14, 6:00pm: last day to drop classes. September 16, 6:00pm: last day to add classes or change grading basis. University policy, no exceptions.

Disclaimers:

The instructor reserves the right to make modifications to this syllabus and schedule during the course of the class should the need arise. Should this occur the students will be responsible for the changes only after an announcement of the changes has been made.

Neither the University nor its employees are responsible for any injuries that occur while participating in activities for this class.

CLASS SCHEDULE

| Date | Activity | Reading / Assignment Due |
|---------------|--|---|
| Sep 2 | Introduction & logistics The scientific method & scientific writing | |
| Sep 9 | Experimental design Campus walk | <i>QUIZ (x2):</i> Diamond 1986, Jamieson et al 2000 |
| Sep 16 | <i>Lab:</i> Mark/recapture I (Campus) | |
| Sep 23 | <i>Lab:</i> Mark/recapture II (Campus) | |
| Sep 30 | Discussion | <i>QUIZ:</i> Guo 2001 |
| Oct 7 | <i>Lab:</i> Fire ecology I (Mission Trails) | <i>DUE:</i> Mark/recapture |
| Oct 14 | <i>Lab:</i> Fire ecology II (Mission Trails) | |
| Oct 21 | Discussion | <i>QUIZ:</i> Connell 1961 |
| Oct 28 | <i>Lab:</i> Barnacles: competition & displacement (Scripps Pier) | <i>DUE:</i> Fire ecology Independent project draft |
| Nov 4 | Discussion | <i>QUIZ:</i> MacArthur 1958 Final independent project plan |
| Nov 11 | Holiday - Veteran's day | |
| Nov 18 | <i>Lab:</i> Shorebirds: behavioral ecology (San Diego River) | <i>DUE:</i> Barnacles |
| Nov 25 | Discussion Prepare for projects & presentations | |
| Dec 2 | Independent projects | <i>DUE:</i> Shorebirds |
| Dec 9 | Independent projects | |
| Dec 14 | 1:00-3:00, 3:30-5:30 Group presentations | |
| Dec 16 | n/a (same times available) | <i>DUE:</i> Independent projects |