

Experiments in Ecology (Bio 51)

2009 Course Schedule and Syllabus

Instructors:

Dr. George Ellmore (Course Coordinator)
Barnum 205, x73188
george.ellmore@tufts.edu
Office hours: M 2:00-5:00 (or by appointment)

Dr. Philip Starks
Dana 310A , x74849
Philip.Starks@tufts.edu
Office hours: M 3-5 pm (or by appointment)

Dr. David DesRochers
Barnum 216B, x75346
David.DesRochers@tufts.edu
Office hours: Tues 2-3; Fri 10-11

Teaching Assistants:

Minda Berbeco (Wednesday)
Barnum 216A, no phone (email is faster)
mberbeco@gmail.com
Office hours: Thursdays 1-3

Noah Wilson-Rich (Thursday)
Barnum 216D, no phone (email is faster)
noah.wilson_rich@tufts.edu
Office hours: Mondays 1-3 (or by appointment)

Meeting Time: Wednesdays or Thursdays 1:30-5:00 pm in Barnum 208 **and** Tuesdays 4:30-5:20 pm in Barnum 114. The Wednesday and Thursday afternoon classes are likely to run longer on weeks that involve field trips (see schedule). Make sure to plan your fall schedule accordingly. Please see Dr. George Ellmore if you have any questions. ATTENDANCE IS MANDATORY AND SWITCHING LAB SECTIONS CANNOT BE ACCOMMODATED. Dress appropriately for field conditions on days that you will be doing fieldwork.

Course Goals: To teach you a variety of techniques from contemporary ecology, and to provide a substantial research context for their use. Each of you will leave the course with experience in: 1) taxonomic identification of organisms, 2) framing research questions, 3) designing experiments, 4) describing and measuring plant architecture 5) analyzing data, and 6) presenting data and interpretations both orally and in writing. For each unit, you will be oriented to some general aspects of a particular problem, then you will investigate specific questions, some of which may be your own, and finally you will present your results to the class.

Texts: *A Short Guide to Writing about Biology*, 6th edition by Jan A. Pechenik

Course Requirements and Grading:

- 3 Partial Research Reports 30% (10% each)
- 3 Group Oral Presentations 30% (10% each)
- 1 Final [Full] Research Report 20%
- 3 Reading Assignments15% (5% each)
- Participation 5%

The Final Research Report that you submit at the end of the term will be based on only one of the three units (plasticity and competition, hermit crab behavior, or plasticity, growth, and defense). This report is more comprehensive than the other reports that you turn in, and it will require library research. When you turn this report in, you must also include the previous two drafts (partial report with TA comments and partial report with instructor comments).

Each instructor will assign a reading list for their Unit, and assignments and discussions will focus on those readings.

Wk	Date	Topic
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Unit 1: Honey Bee Sociobiology (Starks)

1	T	Sept 8	Course Introduction (Ellmore et al.) <i>Reading to be assigned for Sept. 16-17</i>
	W	Sept 9	Introduction to the scientific method, levels of analysis, and honey bee sociobiology, followed by walk to field site (Starks)
	Th	Sept 10	Introduction to the scientific method, levels of analysis, and honey bee sociobiology, followed by walk to field site (Starks)
2	T	Sept 15	Introduction to reading and writing research papers, to heat-shielding, and to data collection. <i>Read chapter 9 in Pechenik prior to class</i>
	W	Sept 16	Honey bee heat-shielding I: Class Project <i>Due: Reading Response I</i>
	Th	Sept 17	Honey bee heat-shielding I: Class Project <i>Due: Reading Response I</i>
3	T	Sept 22	Review of class field data; graphical data representation & statistical analysis <i>Read chapter 4 in Pechenik prior to Tuesday class</i>
	W	Sept 23	Honey bee heat-shielding II: Group Projects
	Th	Sept 24	Honey bee heat-shielding II: Group Projects
4	T	Sept 29	1) Introduction to Graphing & Analysis 2) Prepare Unit 1 oral presentations (30 min)
	W	Sept 30	Unit 1 Oral Presentations
	Th	Oct 1	Unit 1 Oral Presentations

Due by noon Monday October 5 in TA's mailbox: Draft of Partial Research Paper on Unit 1—Title, Methods, Results, Acknowledgements, & Literature Cited

Available Tuesday October 6 at 5:20PM in class: TA-marked Draft Research Papers.

Due by noon Friday October 9 in faculty mailbox: Final Version of Unit 1 Research Paper (Starks mailbox)

Unit 2: Avian ecology and urbanization (DesRochers)

5	T	Oct 6	Introduction to avian ecology, urbanization, and Twittering. <i>Reading to be assigned for Oct. 20</i>
	W	Oct 7	Begin discussing experiments, campus walk, bird identification, and using binoculars
	Th	Oct 8	Begin discussing experiments, campus walk, bird identification, and using binoculars
6	[T	Oct 13]	Tufts Monday schedule: no discussion section
	W	Oct 14	On-campus experiments
	Th	Oct 15	On-campus experiments
7	T	Oct 20	Discuss results from prior week's experiments and finalize field trip plans <i>Due: Reading Assignment 2</i>
	W	Oct 21	FIELD TRIP (Middlesex Fells, 1:30-5:30pm)
	Th	Oct 22	FIELD TRIP (Middlesex Fells, 1:30-5:30pm)
8	T	Oct 27	Prepare Unit 2 oral presentations
	W	Oct 28	Unit 2 Oral Presentations
	Th	Oct 29	Unit 2 Oral Presentations

Due by noon Monday Nov 2 in TA's mailbox: Draft of Partial Research Paper on Unit 2—Title, Introduction, Results, Acknowledgements, & Literature Cited

Available Tuesday Nov 3 at 5:20PM in class: TA-marked Draft Research Papers

Due by noon Friday November 6: Final Version of Unit 2 Research Paper (DesRochers mailbox)

Wk	Date	Topic
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Unit 3: Seed Tolerance to Predation (Ellmore)

9	T	Nov 3	Seed architecture, related to tolerance vs resistance <i>Reading to be assigned for Nov. 17</i>
	W	Nov 4	set up seed damage experiments: plant damaged seeds and controls
	Th	Nov 5	set up seed damage experiments: plant damaged seeds and controls
10	T	Nov 10	Forest seeds: structure, seed shadows, seed fates
	[W	Nov 11]	Veterans' Day – No Class
	[Th	Nov 12]	No Class
11	T	Nov 17	Design seed placement experiments for the field. <i>Due: Reading Assignment 3</i>
	W	Nov 18	FIELD TRIP (Middlesex Fells, 1:30-5:30pm)
	Th	Nov 19	FIELD TRIP (Middlesex Fells, 1:30-5:30pm)
12	T	Nov 24	Consultation/ Open work session
	[W	Nov 25]	No Class - Thanksgiving Break
	[Th	Nov 26]	No Class - Thanksgiving Break
13	T	Dec 1	Seedling parameters
	W	Dec 2	Unit 3 destructive sampling of seedlings
	Th	Dec 3	Unit 3 destructive sampling of seedlings
14	T	Dec 8	Finalize Unit 3 oral presentations; course evaluations
	W	Dec 9	Unit 3 Oral presentations
	Th	Dec 10	Unit 3 Oral presentations

Due by noon Monday Dec 7 in TA's mailbox: Draft of Partial Research Paper on Unit 3 — Title, Results, Discussion, Acknowledgements, & Literature Cited

Available in class Tuesday December 8: TA-marked Draft Research Papers.

Due noon Friday December 11: Final Version of Unit 3 Research Paper (Ellmore mailbox; instructor-graded papers will be available 4pm Dec. 14 for those assigned to Unit 3 for the Final (Full) Research Paper

Due noon Friday December 18: *Final (Full—all sections) Research Paper (give to Eileen Magnant, Dept. Secretary, Dana 120); noon Monday Dec. 21 for those assigned to Unit 3*