

Experiments in Ecology (Bio 51)

2011 Course Schedule and Syllabus

Instructors:

Dr. Jan Pechenik, Course Coordinator

Dana 224, x7-3199,

Jan.pechenik@tufts.edu

Office hours: by appointment (email with 3 times that work for you)

Dr. George Ellmore

Barnum 205

George.ellmore@tufts.edu

Office hours: Mon 2-5 PM

Dr. Francie Chew

Barnum 107, x 7-3189

Frances.chew@tufts.edu

Office hours: Tues 1:30-3:30 pm or by appointment.

Teaching Assistant:

Casey Diederich (both sections)

Dana 224, x7-5346,

casey.diederich@tufts.edu

Office hours: Dana 224a, Tues 1:00-3:00, or by appointment

Meeting Times: Tuesdays 4:30-5:20 pm in Barnum 114 for joint discussion session, **and either** Wednesdays (Sec. A) or Thursdays (Sec. B) 1:30-5:00 pm in Barnum 208 for lab sessions. The Wednesday and Thursday afternoon classes are likely to run longer on weeks that involve field trips (see schedule below). Make sure to plan your fall schedules accordingly. Please contact Dr. Jan Pechenik if you have any questions. **ATTENDANCE (FOR LAB SESSIONS AND FOR DISCUSSION SESSIONS) IS MANDATORY. YOU WILL NOT BE ALLOWED TO SWITCH LAB SECTIONS AFTER THE START OF THE SEMESTER.** 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) censusing populations, 5) analyzing data, and 6) presenting data both orally and in writing. For each unit, you will be oriented to some general aspects of a particular problem. Then you will work in small groups to investigate specific research questions, some of which may be your own. Finally, your group members will present their results to the class, and you will submit individual, written research reports.

Text: *A Short Guide to Writing about Biology*, 7th edition by Jan A. Pechenik; additional papers to be assigned.

Course Requirements and Grading:

- 3 Partial Research Papers 30% (10% each)
- 3 Group Oral Presentations 30% (10% each)
- 1 Final Complete Research Report 20%
- 3 Reading Responses 15% (5% each)
- Participation 5%

The Final Complete Research Report that you submit at the end of the term will be based on only one of the three units (mechanical stress in trees--Ellmore, plant phenotypic plasticity--Chew, or hermit crab shell choice behavior--Pechenik). 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 readings for their Unit; assignments and discussions will focus on those readings.

Wk	Date	Topic
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Unit 1: Mechanical Stress in Trees (Ellmore)

1	T	Sept 6	Course Introduction (Pechenik <i>et al.</i>) Reading I to be assigned for Sept 14-15
	W	Sept 7	Field trip to the Charles Ward Reservation (Ellmore)
	Th	Sept 8	Field trip to the Charles Ward Reservation (Ellmore)
2	T	Sept 13	<i>Diagnostic Features of Trees; Reading Response I due</i>
	W	Sept 14	Keys to Genera of Trees (Medford Campus)
	Th	Sept 15	Keys to Genera of Trees (Medford Campus)
3	T	Sept 20	Arrive at wood traits & functional groups.
	W	Sept 21	Wood tolerance: Group Projects
	Th	Sept 22	Wood tolerance : Group Projects
4	T	Sept 27	1) Revisit graphing and data analysis 2) Prepare Unit 1 oral presentations for Wedn and Thurs mini-symposia (30 min)
	W	Sept 28	Unit 1 Mini-Symposium (Ellmore)
	Th	Sept 29	Unit 1 Mini-Symposium (Ellmore)

Due by noon Monday October 3 in Casey Diederich's mailbox: Draft of Partial Research Paper on Unit 1 (Ellmore)—Title, Introduction, Results, Acknowledgements, & Literature Cited

Oct 5, 6: Ellmore Marked Draft Research Papers will be returned to students at the start of class.

Unit 2a (Chew): Resource Availability and Plant Phenotypic Plasticity

5	T	Oct 4	Intro to unit & orientation for fieldwork; assign Reading II for Oct. 11
	W	Oct 5	Field Trip & group projects, Pine Hill, Middlesex Fells (Chew)
	Th	Oct 6	Field Trip & group projects, Pine Hill, Middlesex Fells (Chew)
6	T	Oct 11	Field data and complementary lab experiments; Reading Response II due (Chew)
	W	Oct 12	Plan & set-up plant growth experiments; preliminary analysis of field data
	Th	Oct 13	Plan & set up plant growth experiments; preliminary analysis of field data

Due by noon Friday October 14 in Ellmore mailbox: Final Version of Unit 1 Partial Research Paper.

Unit 3 (Pechenik): Studies on Hermit Crab Shell Selection Behavior

7	T	Oct 18	Workshop on Graphing and Data Analysis (Pechenik); Assign reading III for Oct 25.
	W	Oct 19	Hermit Crab I: Class Project on shell eviction techniques
	Th	Oct 20	Hermit Crab I: Class Projects on shell eviction techniques
8	T	Oct 25	Discussion; Reading Response III due.
	W	Oct 26	Hermit Crab II: Class Project— <i>C. plana</i>
	Th	Oct 27	Hermit Crab II: Class Project— <i>C. plana</i>

Wk	Date	Topic
9	T Nov 1	Recitation (Pechenik) Plan group research projects
	W Nov 2	Hermit Crab III—Group Project
	Th Nov 3	Hermit Crab III—Group Project
10	T Nov 8	= Tufts Friday, so no Bio 51 class today
	W Nov 9	Unit 3 Mini-Symposium—hermit crabs
	Th Nov 10	Unit 3 Mini-Symposium —hermit crabs

Due by noon Monday November 14 in Casey Diederich's mailbox: Draft of Partial Research Paper on hermit crab behavior—Title, Methods, Results, Acknowledgments, & Literature Cited
Nov 16, 17: Marked Pechenik Draft Research Papers will be returned to students.

Due by noon Monday November 21 in Pechenik mailbox: Final Version of Unit 3 Partial Research Paper on hermit crab behavior

Unit 2b: (Chew): Resource Availability & Plant Phenotypic Plasticity, cont'd.

11	T Nov 15	Orientation to analysis of plant growth data
	W Nov 16	Harvesting and data collection
	Th Nov 17	Harvesting and data collection
12	T Nov 22	Locating References at the Library (Tisch Library w/ Regina Raboin)
	W Nov 23	No Class - Thanksgiving Break
	Th Nov 24	No Class - Thanksgiving Break
13	T Nov 29	Prepare group presentations; final Full Research Paper assignments given out.
	W Nov 30	Unit 2 Mini-Symposium—phenotypic plasticity; Course Evaluations
	Th Dec 1	Unit 2 Mini-Symposium—phenotypic plasticity; Course Evaluations

Due by noon Monday December 5 in Casey Diederich's mailbox: Draft of Partial Research Paper on Unit 2 (Chew) — Title, Results, Discussion, Acknowledgements, & Literature Cited

Dec 7, 8: Marked Draft Research Papers will be returned to students at the start of class.

Due Monday 5 PM December 12 in Dr. Chew mailbox: Final Version of Unit 2 Partial Research Paper

14	T Dec 6	Open work session
	W Dec 7	Open work session
	Th Dec 8	Open work session

Available Monday December 12: Graded Unit 3 Partial Research Paper on hermit crab behavior from Dr. Pechenik

Available Wednesday December 14: Graded Unit 2 Partial Research Paper from Dr. Chew.

Due noon Monday December 19: Final Complete Research Paper (give to Eileen Magnant, Dept. Secretary, Dana 120)

Note: Final exams begin Dec 15, end Dec 22.