General Entomology 451/551 Syllabus - Fall 2006

Instructor: Dr. Todd Blackledge
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Office hours: Wednesday 10-11:30 am, by appointment, or anytime…

Time & Location (4 credit hours)
Tues 12:05-4:00pm (Lecture/Lab) & Thurs 12:05-1:55 pm (Lecture) in ASEC 583

Graduate Teaching Assistant:
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Course Objectives: A general knowledge of insects is important (and fun!) for many reasons. Insects are the most diverse organisms on the planet and they are essential for the function of most terrestrial ecosystems. Consequently, insects have played decisive roles in the evolution of many groups of organisms, such as the flowering plants. Much of our economic productivity depends upon insects but they are also cause immense damage to agriculture and transmit some of the most common and lethal diseases in the world. In addition, insects provide important model systems to address a variety of scientific questions from evolutionary development of complex body designs to how organisms communicate with one another.

By the end of this course, you will:
1) gain a general knowledge of insect diversity and ability to identify insects in the field & lab
2) know about the design and function of insect bodies
3) be exposed to some of the amazing strategies insects have for survival and reproduction
4) understand the major evolutionary trends within the insects
5) learn about how insects impact our everyday lives

Course Layout: You will attend class twice each week. Tuesday will sometimes consist of an hour of lecture followed by a laboratory but usually a single, longer laboratory. Thursday will typically consist of two lecture periods with a short break in between. Early in the year we will meet at the Martin Field Station Building at the Bath Nature Preserve for our Tuesday class so that we can work outside. Completing an insect collection is an essential part of the laboratory and will require substantial time outside of class, both collecting and identifying insects.

Text
(Required) Lecture- P.J. Gullan & P.S. Cranston. *The insects, an outline of entomology*. 3rd ed.
Lab- D. Borror, C. Triplehorn & N. Johnson. *An introduction to the study of insects*. 7th ed.
(Recommended)- D. Borror & R. White. *A field guide to the insects*.

Approximate grading scale

		Points		
Lecture				
	Question sets (2)	80	2.5% each	
	Midterm 1	210	13.1%	
	Midterm 2	210	13.1%	
	Final	300	18.7%	
Lab				
	Goldenrod report	30	1.9%	
	Preliminary collection	30	1.9%	
	Midterm	140	8.8%	
	Final	200	12.5%	
	Insect Collection	400	25.0%	(2.6% possible extra credit)
	Total	1600		

Attendance

Your success is directly related to class attendance and participation. Lecture outlines will be posted on the web as a guide for studying but they will not contain enough information for you to succeed without also attending lecture. The laboratory, and the insect collection in particular, will demand much time outside of class. Plan to spend several hours a week outside of lab collecting insects and gradually shift that time towards identifying insects as the semester progresses. **Remember**: *Your collection is a long-term project that cannot be completed in only a few weeks at the end of the semester!*

Academic integrity

You are expected to abide by University of Akron's code for academic conduct. All assignments are to be completed on your own, unless they state otherwise. Also, you should be aware that plagiarism includes copying not just someone else's words but also their *ideas*. Giving credit where credit is due and properly citing the literature are fundamental to communication in the sciences. So don't just change a few words from someone else's work in the belief that it is now your "own".

You are encouraged to study together and in particular to work on your collections together. It is more fun to go into the field collecting with a friend and it can be very helpful to identify insects together too. That way you show each other interesting and unusual insects.

Tentative Lecture Schedule (*May change to accommodate guest presenters & student needs*)

Week		Date	Topic	Readings
1	Tues	29 Aug	1. Introduction – Not all insects are bugs... LAB INTRODUCTION	G&C Chap 1
	Thurs	31 Aug	2. The insect body & 3. Insect diversity I	G&C Chap 2 & 7 skim intro. to orders in BTJ
2	Tues	5 Sep	LAB 1: **BATH NATURE PRESERVE -** Introduction to collecting	G&C Chap 17, skim BT&J ch. 35
	Thurs	7 Sep	4. Insect diversity II 5. Insect diversity III & evolutionary history	G&C Chap 2, Chap 7
3	Tues	12 Sep	LAB 2: **BATH NATURE PRESERVE -** Field Communities	
	Thurs	14 Sep	6. Wings – Bumblebees really can fly 7. The cuticle and moulting	G&C 3.1.4 G&C 2.1, 6.3-6.4
4	Tues	19 Sep	LAB 3: **BATH NATURE PRESERVE** - Forest Communities	G&C Chap 9
	Thurs	21 Sep	8. Inside insects I – Muscles, nerves & circulation 9. Inside insects II – Respiration, digestion & excretion ****Question set #1 due**	G&C 3.1-3.4 G&C 3.5-3.7
5	Tues	26 Sep	LAB 4: **BATH NATURE PRESERVE** - Aquatic communities	G&C Chap 10
	Thurs	28 Sep	10. Sensory systems: An insect's view of the world 11. Communication	G&C Chap 4
6	Tues	3 Oct	LAB 5: External anatomy ****Preliminary collection due in lab**	
	Thurs	5 Oct	****Lecture Exam 1 (through 28-Sept)**	
7	Tues	10 Oct	LAB 6: Internal Anatomy	
	Thurs	12 Oct	12. Sex in insects: Rape, incest, and why bother? 13. Pollination ecology – who's using whom?	G&C 3.8, Chap 5 G&C 10.3
8	Tues	17 Oct	****Laboratory Exam 1 (labs 1-6)**	

Week		Date	Topic	Readings
	Thurs	19 Oct	14. Plant-insect interactions 15. Insects as predators	G&C Chap 11 G&C Chap 13
9	Tues	24 Oct	LAB 7: Arthropoda, Apterygotes & Paleoptera	Skim BTJ ch. 6-10
	Thurs	26 Oct	16. Insect defenses – chemical 17. Insect defenses – visual ****Question set #2 due**	G&C Chap 14
10	Tues	31 Oct	LAB 8: Orthopteroids, Hemipteroids & Neuroptera	Skim BTJ ch. 11-25, 27
	Thurs	2 Nov	18. Population ecology and life history strategies 19. Surviving the winter – Diapause	G&C Chap 6
11	Tues	7 Nov	LAB 9: Coleoptera & Hymenoptera	Skim BTJ ch. 26 & 28
	Thurs	9 Nov	****Lecture exam 2 (12-Oct through 2-Nov)**	
12	Tues	14 Nov	LAB 10: Diptera, Lepidoptera & all the rest	Skim BTJ ch. 29-34
	Thurs	16 Nov	20. Sociobiology – How to cooperate selfishly 21. Sociobiology – Building cities without blueprints	G&C Chap 12
13	Tues	21 Nov	****Final Laboratory Exam (labs 7-10)**	
	Thurs	23 Nov	**No class** – Thanksgiving Break	
14	Tues	28 Nov	LAB: Open laboratory to work on collection	
	Thurs	30 Nov	22. Conservation and invasion biology 23. Insects in agriculture	G&C Chap 16
15	Tues	5 Dec	****LAB: Final collection due by 12:05 p.m.**	
	Thurs	7 Dec	24. Medical/forensic entomology - CSI, X-files & Reality	G&C Chap 15
		TBA	**FINAL EXAM (comprehensive)**	