ENTM 612 - Insect Ecology Spring 2015 – Syllabus & Course Description
Tu-Th 12:30-13:45, Room 1113 Plant Sciences

INSECT ECOLOGY is 3-credit, advanced course in population and community ecology, plant-insect interactions, insect biodiversity and biogeography, and applied ecological entomology, with shared emphases on both classical and current ecological & entomological literature.

Instructor: Dr. Daniel S. Gruner dsgruner@umd.edu, 405-3957
Office Hours: 11:00 – 12:00 Tu & Th, 9:00-10:00 Fri, Plant Sciences 4142 or by appointment

Course email reflector: entm612-0101-spr15@coursemail.umd.edu

Prerequisites: an undergraduate survey course in general ecology or equivalent, or with permission of the department. Prior knowledge equivalent to a basic entomology course and coursework in calculus and basic statistics are highly recommended but not required.

Course Objectives: By the end of this course students should: 1) recognize the important role of natural history within the discipline of insect ecology; 2) understand how basic ecological concepts relate to insects and their relatives and appreciate their applications to management and pest control; 3) appreciate the role insects have played in the historical development and testing of ecological theories; 4) critically assess and objectively critique the primary scientific literature on insect ecology; 5) appreciate the quantitative dimensions of insect ecology.

Text: Price, P.W. *et al.* 2011. *Insect Ecology: Behavior, Populations and Communities*, Cambridge University Press (ISBN 052154260X). This text is strongly recommended. Reading lists will be provided for each unit with supplemental readings from the primary literature available on Endnote Web. Readings will be posted on ELMS well in advance: please have text and other literature readings completed by the indicated dates and prior to the relevant discussion sections.

Grading Policies and Course Content:
Your final plus/minus letter grade will be based on the accumulation of numeric scores based upon the breakdown to follow, and according to this scale: 100-98 = A+; 97-93 = A; 92-90 = A-; 89-87 = B+; 86-83 = B; 82-80 = B-; 79-77 = C+; 76-73 = C; 72-70 = C-; 69-67 = D+; 66-63 = D; 62-60 = D-; 59 & below = F. There will be no curve on final grades, although for numerically borderline cases I will round up to the nearest whole number.

Midterm Exam	**100**
Final Exam	**100**
Term Paper (Literature Review)	**150**
o First Draft (10)	
o Peer Review (15 x 2 = 30)	
o Cover Letter: Response to Reviews (10)	
o Final Draft (100)	
Literature Discussions	**50**
o Participation (6 x 5 = 30)	
o Leadership (20)	

TOTAL = 400 points

I. Exams: There will be two [2], primarily essay-based, closed book, 2-hour exams. The midterm will cover units 1 & 2, and the final exam will cover units 3 & 4 (see schedule below). The final exam will not be explicitly cumulative, although knowledge of foundational topics is expected. Missed exams cannot be re-scheduled without advance approval or campus-approved, documented excuses (i.e. medical emergencies, excused campus activities, religious observances or family emergencies). Exams will cover content and ideas from lecture, assigned readings, and discussion papers. For lectures, PDF handouts, outlines and presentation summaries on the class canvas site (login to elms.umd.edu) no later than the evening prior to lecture.

II. Review Paper: Students will prepare a concise review paper on a current topic in insect ecology (150 pts total). Students will choose a topic and prepare a high quality draft for internal peer review by two of their colleagues. Each student will prepare two anonymous reviews, and each student will then revise their own paper according to reviews received. The final, revised paper will be submitted along with a cover letter describing the changes made (or not made) in response to the reviews. Late papers will be penalized 5 points for each business day they are late.

Limit your final paper to **5 printed pages** [12 point font; 1-inch margins; single-line spacing]. References and figures are not counted in the 5-page limit. First drafts should be double-spaced and may exceed this page limit (>10 pages). Use primary literature and in-text citations to support your arguments, formatted consistently according to the bibliographic style of any relevant entomological or ecological journal. The paper must use at least ten [10] citations to primary peer-reviewed published literature, at least five [5] of which should be dated 2009 or later. Papers will be assessed for their clarity, strength of the argument and narrative, scientific content, use of key concepts covered in class, and use of relevant literature. Peer reviews will be assessed for their critical insight according to a rubric that will accompany the assignment.

III. Discussion: There will be six (6) student-led discussion sessions in which we will discuss historical and current primary literature (50 points total). For each session, up to five [5] points will be awarded for attendance and participation, with an emphasis on preparation, engagement, and quality of participation (not on quantity or volume!). Two to three students will lead and stimulate each discussion – all students will participate in leading one discussion and can earn up to twenty points for their preparation, summary, and questions for discussion [20]. At least five days prior to discussion, leaders will select one [1] recent (2009 or later) AND one classic, seminal paper from the primary literature on the topics covered in lectures leading up to discussion (see schedule below), and prepare a capsule summary and several discussion questions to be posted on the Discussion Forum on the course space on ELMS. These summaries should be phrased in your own words, and they should include at least 1-2 penetrating comments or questions that might be pursued in the discussion. Although I will not monitor your attendance for lecture, participation is essential for discussion. Therefore, **attendance for discussions is required, and no late discussion summaries will be accepted** without advance approval or Campus-approved excuses.

Course Policies:

I. Academic Integrity: Academic dishonesty will not be tolerated. At all times, students must adhere to the University of Maryland's Code of Academic Integrity and the student-generated Honor Pledge. Please review in particular the policies regarding plagiarism and proper citation of the work of others. Violations of academic integrity policies, such as plagiarism, may result in a failing grade with an indication of failure due to academic dishonesty noted on your transcript.

II. Exam Days: Examinations will cover material presented in lectures, class discussions and reading assignments. There will be no scheduled makeup dates for exams, and exceptions will be made only in the event of emergency. It is the student's responsibility to inform the instructor of any intended absences for religious observances or any excused school-related events IN ADVANCE. Students qualifying for Disability Support Services should contact Dr. Gruner at the beginning of the course.

III. Course evaluations: Evaluations are an essential part of the process by which the University of Maryland seeks to improve teaching and learning, and participation by all students is strongly encouraged. The University Senate approved the implementation of a standard, online, University-wide course evaluation instrument. Each course evaluation contains a set of universal questions, and some are supplemented by questions from specific colleges. Across the University, course evaluations are administered through a web-based system dubbed CourseEvalUM.

IV. Copyright notice: All course materials are copyright protected, and course materials may not be reproduced for anything other than personal use without written permission.

Lect#	Date	Topic	Chapters
1	27-Jan	Introduction: Ecological Importance of Insects & Kin	1
		UNIT 1: Plant—Herbivore Interactions	
2	29-Jan	Plants as Heterogeneous Resources for Herbivores	4.1-4.2
3	3-Feb	Pattern and Theory of Plant Defense	4.3-4.4
4	5-Feb	Herbivore Adaptations, Behavior and Distributions	4.5
	10-Feb	**Discussion #1**	
5	12-Feb	Herbivore Diet Breadth Evolution & Co-Evolution	4.6, 8.8
		UNIT 2: Predator—Prey Interactions	
6	17-Feb	Predator Behavior and Insect Defense	2.7, 7.1-7.2, 7.7-7.8, 8.11
7	19-Feb	Multitrophic Interactions: Plant Mediation of Predation	4.6, 7.7, 13.2
	24-Feb	**Discussion #2**	
8	26-Feb	Predation: Functional & Numerical Responses	7.3-7.4
9	3-Mar	Population Growth & Dynamics	7.5, 9.1-9.2
10	5-Mar	Predator-Prey Population Regulation ***** Term Paper Assignment***	11.1-11.5
11	10-Mar	Stability, Persistence of Predator-Prey Interactions & Biological Control	7.6, 7.appl
	12-Mar	**MIDTERM EXAMINATION**	
	17-Mar	Spring Break	
	19-Mar	Spring Break	
	24-Mar	**Discussion #3**	
		UNIT 3: Evolution of Life Histories & Insect Societies	
12	26-Mar	Life History Evolutionary Theory	10
13	31-Mar	Mating Systems, Parental Investment & Sexual Selection	2.8
14	2-Apr	Structure and Evolution of Insect Societies	3
	7-Apr	**Discussion #4**	
		UNIT 4: Communities, Ecosystems, and Macroecology	
15	9-Apr	Competition, Coexistence, Resource Partitioning & the Niche ***** First Draft Term Paper Due***	5, 12.2
16	14-Apr	Positive Interactions: Mutualisms & Pollination	6
17	16-Apr	Parasites, Pathogens & Insects as Vectors	8
18	21-Apr	Food Webs and Trophic Cascades ***** Term Paper Peer Reviews Due***	12.4, 12.7, 13.3
	23-Apr	**Discussion #5**	
19	28-Apr	Insect Community Structure & Development	12
20	30-Apr	Biogeography & Macro Patterns of Diversity	14
21	5-May	Insect Diversity, Nutrient Cycling & Ecosystem Function ***** Final Term Paper Due***	7.6, 15.3
22	7-May	Invasive Species, Conservation & Global Change	15
	12-May	**Discussion #6**	
	19-May	**FINAL EXAMINATION (1:30-3:30 PM)**	