INSECT ECOLOGY is an advanced course in population and community ecology, plant-insect interactions, insect biodiversity and biogeography, and applied ecology, with an emphasis on current ecological & entomological literature. The prerequisite is a course in general ecology or with permission of the department.

Instructor: Daniel Gruner, 4142 Plant Sciences Bldg., 5-3957, dsgruner@umd.edu

Meeting time & place: MWF 9-9:50 AM, Plant Sciences 1111

Office hours: MW 10-12 or by appointment

Course email: entm612-0101-spr09@coursemail.umd.edu

Text: Price, P.W. 1997. Insect Ecology, John Wiley and Sons, New York. Chapter readings accompany lecture topics [PWP]. Reading lists will be provided for each unit with weekly assignments from journal articles, book chapters, and/or reviews. Readings will be posted on ELMS well in advance of each unit. Please have text readings [PWP] completed by the indicated dates, and literature readings completed prior to the relevant discussion sections.

Course reserves (held at McKeldin library): PWP; Insect Ecology – An Ecosystem Approach (TD Schowalter, 2006)

Discussions: There are nine scheduled discussion sessions where we will consider historical and current primary literature. Two or three students will lead and stimulate each discussion.

Evaluation and Grading (350 points total): There will be two, 2-hour exams (one mid-semester + final, 100 pts each = 200 pts), and one short review paper on a current topic in ecology (assigned, 100 pts). In addition, students will be graded on participation in discussions (50 points). Emphasis here will be on preparation, engagement, and quality of participation (not on quantity or volume).

Learning Outcomes: 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 and applied ecological concepts relate to insects and their relatives; 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.

Academic Integrity: The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu. To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments: “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment).”
## Insect Ecology - ENTM 612 - Course Schedule, Spring 2009

**UNIT 1: Plant-Herbivore Interactions [PWP Chapters 5 and 6]**

- **Jan 26 (M)**  Introductory Comments
- **Jan 28 (W)**  Host Plants as Heterogeneous Resources for Herbivores (Lecture #1)
- **Jan 30 (F)**  Ecol. Stoichiometry & the Role of N in Plant/Herbivore Interactions (Lecture #2)
- **Feb 2 (M)**  Theory and Pattern of Plant Defense (Lecture #3)
- **Feb 4 (W)**  DISCUSSION 1
- **Feb 6 (F)**  Counterploys of Herbivores to Plant Defense (Lecture #4)
- **Feb 9 (M)**  Diet Breadth and Host Plant Specialization (Lecture #5)
- **Feb 11 (F)**  "Enemy-Free" Space and Herbivore Distribution and Abundance (Lecture #6)
- **Feb 13 (F)**  Plant Pattern and Herbivores: Reciprocal Responses (Lecture #7)
- **Feb 16 (M)**  Co-evolution between Herbivores and Host Plants (Lecture #8)
- **Feb 18 (W)**  DISCUSSION 2

**UNIT 2: Predator (Parasite)/Prey Interactions [PWP Chapters 7, 8, and 9]**

- **Feb 20 (F)**  Functional Responses (Lecture #9)
- **Feb 23 (M)**  Numerical Responses, Uncoupling Factors and Outbreaks (Lecture #10)
- **Feb 25 (W)**  Insect Defense against Natural Enemies (Lecture #11)
- **Feb 27 (F)**  Predator-Prey Population Dynamics (Lecture #12)
- **Mar 2 (M)**  DISCUSSION 3
- **Mar 4 (W)**  "Stability" and Persistence of Predator-Prey Interactions (Lecture #13)
- **Mar 6 (F)**  Ecological Basis for Biological Control (Lecture #14)
- **Mar 9 (M)**  Top-down Versus Bottom-up Control and Trophic Cascades (Lecture #15)
- **Mar 11 (W)**  DISCUSSION 4
- **Mar 13 (F)**  MIDTERM EXAMINATION (Units 1 & 2)
- **Mar 16-20 (M)**  SPRING BREAK RECESS

**UNIT 3: Life History and Reproductive Strategies [PWP Chapter 14]**

- **Mar 23 (M)**  Life History Theory including Migration and Diapause (Lecture #16)
Mar 25 (W)  Constraints on Life History Evolution (Lecture #17)
Mar 27 (F)  DISCUSSION 5

UNIT 4: Population and Metapopulation Dynamics [PWP Chapters 17, 18, and 19]
Mar 30 (M)  Historical Perspectives on Insect Population Regulation (Lecture #18)
Apr 1 (W)   Current Controversies in Insect Population Regulation (Lecture #19)
Apr 3 (F)   Metapopulation Dynamics and Conservation Ecology (Lecture #20)
Apr 6 (M)   DISCUSSION 6

UNIT 5: Competition and Community Structure [PWP Chapters 10-11, 20-24]
Apr 8 (W)   Coexistence, the Division of Resources and the Niche (Lecture #21)
Apr 10 (F)  Do Insects Compete? (Lecture #22)
Apr 13 (M)  Insect Community Structure and Development (Lecture #23)
Apr 15 (W)  Positive Interactions: Mutualisms and Pollination (Lecture #24)
Apr 17 (F)  No class
Apr 20 (M)  DISCUSSION 7
Apr 22 (W)  Patterns of Diversity and Tropical Richness (Lecture #25)
Apr 24 (F)  Insect Diversity and the Functioning of Ecosystems (Lecture #26)
Apr 27 (M)  DISCUSSION 8

Apr 29 (W)  Sexual Selection (Lecture #27)
May 1 (F)   Mating Systems, Parental Investment and Sex Ratio (Lecture #28)
May 4 (M)   Structure of Insect Societies (Lecture #29)
May 6 (W)   Evolution of Insect Societies (Competing Hypotheses) (Lecture #30)
May 8 (F)   DISCUSSION 9
May 11 (M)  REVIEW
May 14-20  FINAL EXAMINATION (Units 3, 4, 5, and 6) -- DATE/TIME TBA