

BSPM 302 Applied and General Entomology

Fall 2012

Clark A-104 (north wing of building)

MWF 9:00 – 9:50, 2 credits

Note: this class runs for 10 weeks, beginning August 20th and ending October 26th (with a 1 hour cumulative final on November 2nd).

Instructor: Paul Ode, C210 Plant Sciences

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TA: Cheryl Bowker

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This course description outlines what you can expect from this class and from us as instructor and TA. It also outlines what we expect from you as a student. Changes to this syllabus, if needed, will be announced in class and posted on RamCT Blackboard.

In this course you will learn the basics of entomology, spanning insect evolution and diversity, structure and function, and interactions with humans and the environment as well as management strategies for ‘problem’ species. The overall theme of this course is insect biodiversity – why are there so many insects and why are they so diverse. The course is roughly divided into these four themes: insect diversity and evolution, insect structure and function, insect interactions with other organisms, and insect interactions with humans.

Note that there are two different lab courses available (optional, but strongly recommended):

- BSPM 303A (General Entomology) – 2 credits, taught by Dr. Boris Kondratieff. This laboratory emphasizes insect biology and diversity in natural systems. You will learn to identify insects to the family level. There are two sections: Tu & Th 1:00–2:40 PM, and W & F 3:00–4:40 PM.
- BSPM 303B (Horticultural Entomology) – 1 credit, taught by Dr. Whitney Cranshaw and Matt Camper. This laboratory emphasizes the biology of common pest and beneficial insects in horticultural systems. You will learn to identify insects to the order level. There are three sections: Tu 8:00–9:40 AM, Tu 10:00–11:40 AM, and Tu 1:00–2:40 PM.

While enrollment in a lab is optional, students usually find that the lab material reinforces the lecture material and vice versa. Both of these courses are independent of this course in terms of content and grading. Lab courses run the entire semester. Drs. Kondratieff, Cranshaw, and Camper are excellent teachers. Prior or concurrent enrollment in BSPM 302 is required to take either lab course.

Cell phones, etc.: Please turn them off during lecture. Answering calls, texting your friends, or checking the web are distracting to the rest of the class and to me.

Questions during class: Questions and comments are always welcome, and indeed encouraged. If something I've said or written isn't clear to you, or you need more explanation, or you want to add a comment, chances are great that you are not the only one. The more interactive this class is, the more everyone will get out of it.

Office hours:

Paul: I don't have set office hours. However, I always welcome drop-in visits to my office (room C210, Plant Sciences Building) and appointments made by phone or e-mail.

Cheryl: Set office hours will be held in Plant Sciences Building E208, M & W: 1:00–2:00 PM, and Th: 9:00–10:00 AM.

Questions and comments about lectures, course management, and readings are always welcome in class, by e-mail, or by office visits. We will make every effort to meet with you or respond to your questions as quickly as possible. However, please be aware that more students make appointments in the days immediately prior to exams.

Contacting you: Please make sure that you have your correct/preferred e-mail address on file with the University so that we can get in touch with you (as a class or individually).

Resources for Disabled Students (RDS): If you feel you have a disability that requires special accommodation in this class (e.g. dyslexia, ADD, ADHD, Irlen Syndrome, etc.) you may be eligible for accommodations/auxiliary aids under the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973. Please contact Resources for Disabled Students in 100 General Services Building, 491-6385, (website: <http://rds.colostate.edu>), to determine eligibility for accommodations or auxiliary aids during this class.

Text: *Gullan PJ, Cranston PS. 2010. The Insects: an outline of entomology. 4th Edition. Wiley-Blackwell Publishing.* This text is (**highly**) recommended. It is available at the CSU bookstore (\$106.75 new, \$75.00 used) and, in limited quantities, from Amazon.com (\$77.35 new, from \$50.26 used) and from other online booksellers. This book is an excellent resource and supplements lecture in much greater depth than I can provide in class. Note: the 3rd edition is completely adequate and considerably cheaper (e.g. from amazon.com: from \$12.50 used); the 2nd edition is also useful if you can find a copy. (I checked these prices on 15 August 2012...).

Lecture handouts: Handouts (lecture outlines and pdfs of slides) will be available on RamCT Blackboard the night before each lecture (I write/revise many of these lectures the night before class). Lecture outlines will contain the outline of the lecture as well as key words, concepts, and any figures. **Handouts and slides are not a substitute for attending lectures.** This is intentional. The process of listening to a lecture, asking questions and making comments, taking notes, and then transcribing them is one of the most effective methods of learning new material. Please let us know if you have difficulty accessing any course material from RamCT Blackboard and we will get it to you in another way.

Assigned Readings:

There are three assigned journal articles (one per exam period), which you should begin reading as they are assigned. These will be scientific journal articles (either research and review articles). The purpose of this is two-fold. First, these articles reinforce the content presented in lecture. Second, learning how to critically read scientific articles is an important skill for anyone in the sciences. Scientific research articles report original research findings. Scientific review articles provide a synthesis of important research findings and ideas on a given topic. Together, these types of articles are the primary, authoritative means by which research is reported and made public to other researchers and practitioners (e.g. extension agents, pest control consultants, medical/veterinary professionals, etc., etc.). All other 'secondary' sources (e.g. brochures – printed or online, Wikipedia, extension bulletins, news periodicals, etc.) obtain their information from primary literature sources. Therefore, it is important for anyone whose profession is related to the sciences be able to read and critically evaluate primary scientific literature.

Approximately 10-15% of the questions on each exam will be based on these assigned readings. See the separate handout posted on RamCT Blackboard, 'Tips for Effectively Reading Scientific Articles,' for guidelines regarding active reading and evaluation of scientific articles and the types of questions that you should be prepared to answer on the exams. If you have any questions or concerns about what you should be getting out of these articles, please don't hesitate to contact either of us.

Exams: Exams will be a combination of short answer essays (1-2 sentences), fill-in-the blank questions/labeled figures, and multiple-choice questions. Exams will emphasize material presented during lecture, and any handouts. Selected questions on each exam will be based on the assigned readings (see above and separate handout).

Bring only #2 pencils to the exams. Exams are closed book; you may not use notes, calculators, cell phones, laptops, iPods (or similar), your neighbors' exams, etc. Make-up exams are NOT possible without prior arrangement AND a letter from your physician or a letter from your instructor (for CSU field trips). After-the-fact excuses are not acceptable unless you have documentation demonstrating that a crisis preventing you from taking the exam came up last minute that was beyond your control (e.g. physician/hospital note). In general, I will try to accommodate illnesses, family crises, etc., but you must let me know beforehand. Note: the final grade for the class is based on 300 total points (see 'Grading' section at the end of this handout for more information).

We aim to grade and return exams within one week. University policy dictates that we return exams directly to each of you. We cannot leave exams in a box or folder for you to pick up. Therefore, you must pick up exams immediately after class or from my office. Once exams are graded, you may pick them up at any time.

Academic Integrity: A summary of the University's Academic Integrity Policy may be found at the following website: <http://facultycouncil.colostate.edu/files/manual/sectioni.htm#1.7.2>

Cheating on exams or submitting plagiarized work demoralizes everyone in the class and will not be tolerated. The minimum penalty for cheating and/or plagiarism in this class is a zero for the exam and this score will count towards your final grade (i.e. you can not replace this score for your score on the essay). Students caught cheating on exams will be reported to the Office of Conflict Resolution and Student Conduct Services. Major infractions may result in a hearing and a permanent notation on your transcript that you were found guilty of academic dishonesty and possible dismissal from the University.

Even if you think you know what plagiarism is, we encourage you to take the 'Plagiarism Self Test' on the TILT website: <http://tilt.colostate.edu/integrity/resources/quiz/index.cfm> for more information about what constitutes plagiarism.

Grading:		Letter Grade	Percentage	Total Points
*Exam 1	100	A	≥ 93	≥ 279
*Exam 2	100	A-	≥ 90	≥ 270
*Exam 3	100	B+	≥ 87	≥ 261
<u>*Cumulative Final</u>	<u>100</u>	B	≥ 83	≥ 249
Maximum points:	300	B-	≥ 80	≥ 240
		C+	≥ 77	≥ 231
		C	≥ 70	≥ 210
*Lowest score is dropped (e.g. if one exam is not taken, this counts as the lowest score)		D	≥ 60	≥ 180
		NP	< 60	< 180

Applied and General Entomology
BSPM 302 – Fall 2012, Clark A-104, 9:00-9:50 AM, MWF
Lecture Schedule

20-Aug	M	Introduction to Course
22-Aug	W	Why Study Insects? Suggested reading: Gullan & Cranston - Chapter 1, Insect Diversity: pp. 1 – 22. (pp 1 – 20 in 3 rd Edition).
24-Aug	F	Evolution of Arthropods Suggested reading: Gullan & Cranston - Chapter 8, Insect Biogeography and Evolution, pp. 224 – 230 (pp. 202 – 208 in 3 rd Edition).
27-Aug	M	Key Points in Insect Evolution; Size and Physical Interactions with the Environment
29-Aug	W	Insect Diversity - Dr. Boris Kondratieff. Suggested reading: Gullan & Cranston – Chapter 7 (both editions)
		<i>Last day to Add or Drop this class is today (29 August)...</i>
31-Aug	F	Insect Diversity (continued)- Dr. Boris Kondratieff. Suggested reading: Gullan & Cranston – Chapter 7 (both editions)
3-Sept	M	Labor Day: University Holiday – NO CLASS.
5-Sept	W	External Anatomy – Head: eating and sensing Suggested reading: Gullan & Cranston - Chapter 2, External Anatomy pp. 23 – 52 (21 – 48 in 3 rd Edition). Also pp. 113 – 118 (insect vision) (pp. 105 - 109 in 3 rd Edition).
7-Sept	F	External Anatomy – Thorax: locomotion Suggested reading: Gullan & Cranston - Chapter 2, External Anatomy pp. 23 – 52 (pp. 21 – 48 in 3 rd Edition), pp. 58 – 60 (pp. 54 – 56 in 3 rd Edition). Also Chapter 8, pp. 231 – 234 (pp. 208 – 211 in 3 rd Edition).
10-Sept	M	External Anatomy – Abdomen: reproduction Suggested reading: Gullan & Cranston - Chapter 2, External Anatomy pp. 23 – 52 (21 – 48 in 3 rd Edition), pp. 231 – 234 (pp. 208 – 211 in 3 rd Edition).
12-Sept	W	Circulation, Gas Exchange, Digestion, and Excretion Suggested reading: Gullan & Cranston - Chapter 3, Internal Anatomy and Physiology (same chapter in 3 rd Edition).

Review session: 5:00-6:00 PM, Clark A-104

14-Sept F Exam 1

17-Sept M **Development and Molting**
Suggested reading: Gullan & Cranston - Chapter 6, Development and Life Histories (same chapter in 3rd Edition).

19-Sept W **Reproduction, Life cycles**
Suggested reading: Gullan & Cranston - Chapter 5, Reproduction (same chapter in 3rd Edition).

21-Sept F **Sensory Systems, Chemical Signals, and the Nervous System**
Suggested reading: Gullan & Cranston - Chapter 3, Internal Anatomy and Physiology pp. 60 – 66 (pp. 56 – 61 in 3rd Edition), Chapter 4, Sensory Systems and Behavior (same chapter in 3rd Edition).

24-Sept M **Sensory Systems, Chemical Signals, and Behavior**
Suggested reading: Gullan & Cranston – Chapter 4, Sensory Systems and Behavior (same chapter in 3rd Edition).

Last day to withdraw from this class is today (24 September)...

26-Sept W **Social Insects**

28-Sept F **Plant–Insect Relationships: herbivory, part 1**
Suggested reading: Gullan & Cranston - Chapter 11, Insects and Plants (same chapter in 3rd Edition).

1-Oct M **Plant–Insect Relationships: herbivory, part 2**
Suggested reading: Gullan & Cranston - Chapter 11, Insects and Plants (same chapter in 3rd Edition).

3-Oct W **Plant–Insect Relationships: pollination**
Suggested reading: Gullan & Cranston - Chapter 11, Insects and Plants (same in 3rd Edition), Chapter 16 pp. 433 – 437 (pp. 417 – 420 in 3rd Edition).

(Review session: 5:00-6:00PM, Clark A-104)

5-Oct F Exam 2

8-Oct M **Carnivory: Predation and Parasitism, part 1**
Suggested reading: Gullan & Cranston - Chapter 13, Insect Predation and Parasitism, pp. 340 – 359 (pp. 328 – 344 in 3rd Edition).

10-Oct	W	Carnivory: Predation and Parasitism, part 2 Suggested reading: Gullan & Cranston - Chapter 13, Insect Predation and Parasitism, pp. 340 – 359 (pp. 328 – 344 in 3 rd Edition).
12-Oct	F	Medical and Veterinary Entomology Suggested reading: Gullan & Cranston - Chapter 15, Medical and Veterinary Entomology (same chapter in 3 rd Edition).
15-Oct	M	Pesticide Classes and Modes of Action - Dr. Whitney Cranshaw.
17-Oct	W	Pesticide Classes and Modes of Action - Dr. Whitney Cranshaw.
19-Oct	F	Pest Management: part 1 Reading: Gullan & Cranston - Chapter 16, Pest Management (same chapter in 3 rd Edition).
22-Oct	M	Pest Management: part 2 Suggested reading: Gullan & Cranston - Chapter 16, Pest Management (same chapter in 3 rd Edition).
24-Oct	W	Biological Control Suggested reading: Gullan & Cranston - Chapter 16, Pest Management (same chapter in 3 rd Edition). (Review session: 5:00-6:00PM, Clark A-104)
26-Oct	F	Exam 3
29-Oct	M	NO CLASS
31-Oct	W	(Review session: 5:00-6:00PM, Clark A-104)
2-Nov	F	Cumulative Final Exam (9:00–9:50 AM in Clark A-104)