

## Biological Control Course (ENTO 4500) Syllabus: Fall 2008

**Course Description:** This course presents an overview of biological control as a means of managing pests in an overall integrated pest management scheme. The primary emphasis will be on insect pests, as this is where the bulk of biological control work has focused, but also will include weed and disease pests.

**Objective:** The students will be able to recognize key groups of arthropod natural enemies and will understand the basic biology of natural enemies of pests, as well as the ecological principles underlying the use of biological control for managing pest insects, plants, and pathogens. Students also will gain practical experience in recognizing and manipulating some natural enemies in the laboratory and greenhouse. Students will improve communication and critical thinking skills through interactive activities and presentations in class.

**Instructor:**

Dr. John R. Ruberson                      ENTO Annex 108                      229-386-7251                      [ruberson@uga.edu](mailto:ruberson@uga.edu)

**Assistance:**

Assistance is available by appointment. Please contact me directly by phone or email. If you have concerns, special needs or questions, please do not hesitate to contact me so that we can work to make your experience as positive as possible.

**Class time and location:**

ENTO 4500 is a 3 credit hour class. Class will meet from 1:25 pm to 2:15 pm on Monday and Friday, and from 1:25 am to 3:20 on Wednesday. Class will meet in Room 201.

**Course Schedule** (this schedule of topics is subject to modification):

Date	No.	Topic	Text pages
18 Aug (M)	1	Course introduction, overview, context; History and philosophy of integrated pest management	4-17 318-337
20 Aug	2	Lab: What's in a crop? Soybeans	
22 Aug	3	History and philosophy of biological control	19-30
25 Aug (M)	4	Ecology of biological control	101-123
27 Aug	5	Lab: What's in a crop? Cotton	
29 Aug	6	Ecology of biological control	101-123
<b>1 Sep (M)</b>		<b>Labor Day – No class</b>	
3 Sep	7	Biology of parasitoids; Lab: Who are the parasitoids?	145-168
5 Sep	8	Ecology of biological control	101-123
8 Sep (M)	9	Biology of parasitoids	145-168
10 Sep	10	Lab: Parasitoid behavior and life history	145-168
12 Sep	11	Biology of parasitoids	145-168
15 Sep (M)	12	Parasitoids in biological control: Case studies	145-168
<b>17 Sep</b>	<b>13</b>	<b>EXAM 1</b>	

19 Sep	14	Biology of predators	124-143
22 Sep (M)	15	Predators in biological control: Case studies	124-143
24 Sep	16	Biology of predators; Lab: Who are the predators?	124-143
26 Sep	17	Biology of nematodes	170-179
29 Sep (M)	18	Biology of pathogens: Bacteria	180-189
1 Oct	19	Lab: Functional response and predation	105-106
3 Oct	20	Biology of pathogens: Viruses	190-202
6 Oct (M)	21	Open Day: Work on Presentations/Collections	
8 Oct	22	Lab: Pathogens and caterpillars	
10 Oct	23	Biology of pathogens: Fungi	203-213
<b>13 Oct (M)</b>	<b>24</b>	<b>Exam 2</b>	
15 Oct	25	Lab:	
17 Oct	26	Biology of herbivores: Animals	233-249
20 Oct (M)	27	Biology of herbivores: Animals, Pathogens; check caterpillars	233-257
<b>22 Oct</b>	<b>28</b>	<b>1<sup>st</sup> Paper presentations; discussion; collection work</b>	
24 Oct	29	Biology of herbivores: Pathogens	251-257
27 Oct (M)	30	Classical biological control	39-61
29 Oct	31	Classical biological control	39-61
<b>31 Oct</b>		<b>Fall Break – No class</b>	
3 Nov (M)	32	Augmentation biological control	62-79
5 Nov	33	Discussion/debate: Is classical biological control too risky?	297-317
7 Nov	34	Augmentation biological control	62-79
<b>10 Nov (M)</b>	<b>35</b>	<b>Exam 3</b>	
12 Nov	36	Lab: Parasitoid cage releases	
14 Nov	37	Conservation biological control	80-96
17 Nov (M)	38	Conservation biological control; Lab: Pesticides and BC	80-96
19 Nov	39	Conservation biological control – Plant resistance	80-96
21 Nov	40	Case studies: Biological control in perennial crops	
<b>24 Nov (M)</b>		<b>Thanksgiving – No class</b>	
<b>26 Nov</b>		<b>Thanksgiving – No class</b>	
<b>28 Nov</b>		<b>Thanksgiving – No class</b>	
1 Dec (M)	41	Case studies: Biological control in row crops	
3 Dec	42	Case studies: Biological control in Med/Vet; review	

<b>5 Dec</b>	<b>43</b>	<b>2<sup>nd</sup> Paper presentations; discussion; collection work</b>	
<b>8 Dec</b>	<b>44</b>	<b>Reading Day – Collection wrap-up; collections due</b>	
<b>?? Dec</b>		<b>Final Exam</b>	

**Grading:**

Each student will develop an insect collection (details below), will complete 2 research papers and accompanying presentations, and will take 3 exams during the semester and a non-comprehensive final. Grades will be earned on a points basis. A total of 1000 points is possible. Grades will be awarded based on portions of the 1000 point total:

- A = 900-1000
- B = 800-899
- C = 700-799
- D = 600-699
- F = anything below 600

Collection requirements (10% of grade = 100 points)

- A. Parasitoids: Collect at least 10 specimens, representing 3 families ( $\geq 2$  with host remains)
- B. Predators: Collect at least 10 specimens, representing 3 families ( $\geq 2$  with host remains)

Information brochures (10% of grade = 100 points)

Two information brochures are required, focused on two of the following: Predators, parasitoids, pathogens, weed biological control, plant pathogen biological control

Exams: 3 during semester and a non-comprehensive final, worth 15% of grade each (150 points each)

Two research papers will be required, which are worth 20% of grade (10% each = 100 points each). The topics will be provided during the semester and will be current issues in biological control.

**Course Textbook:**

“Natural Enemies”, by Ann E. Hajek (2004, Cambridge Univ. Press). Cost is ca. \$60.00

**Attendance:**

Students are expected to attend class on a regular basis. If absent from class, it is the responsibility of the student to make up any work that is missed.

**University Honor Code and Academic Honesty Policy**

Students are reminded that they are bound by the University’s Academic Honesty Policy. This policy is posted on the Web at: [www.uga.edu/ovpi/academic\\_honesty/culture\\_honesty.htm](http://www.uga.edu/ovpi/academic_honesty/culture_honesty.htm)  
*All academic work must meet the standards contained in “A Culture of Honesty.” Each student is responsible to inform themselves about those standards before performing any academic work.*

It is expected that all students will treat everyone else in the room with respect and dignity.

**Food and Drink in the Classroom:**

University policy prohibits smoking, food or drink in all labs and classrooms.

**Cell Phones:**

Please leave cell phones either off or on silent during class, and do not text message during class.