

## Plant-insect interactions (BISC 535)

**Instructor:** Dr. Ryan Garrick, office: Room 508 Shoemaker Hall, e-mail: [rgarrick@olemiss.edu](mailto:rgarrick@olemiss.edu)

**Class time & location:** **Tues & Thurs: 4:00–5:15pm, Shoemaker Room 408.** Regular attendance is expected. Use of **cell phones** not permitted, including taking photos and sending text messages. Please turn them off during class. Use of **laptop computers** for note-taking is fine, but it is not appropriate to be sending tweets and emails, etc.

**Freely available required text:** *Insect-plant biology*. Authors: Louis M. Schoonhoven, Joop J. A. van Loon, Marcel Dicke. ISBN: 9780198525950. Publisher: Oxford University Press.

**Office hours:** **Tues & Thurs 12:00–1:00pm, (no appointment necessary).** If you cannot see me during the scheduled office hours, an appointment will need to be made by email. Please include the following: (1) BISC 535 in the subject line, (2) what you would like some help with in the main text of the email (that way I can be better prepared), and (3) your first and last name at the end of the message. You should receive a response from me within 24 hours.

**Description:** This course will provide a broad overview of the ecology and co-evolution of insect-plant interactions. Interactions will be examined from multiple perspectives, using a combination of formal lectures, and interactive discussions of papers from the primary literature.

**Prerequisites:** Grade of C or better in BISC 160, 161, 162, and 163.

**Blackboard:** Log on at [www.olemiss.edu](http://www.olemiss.edu). This is the first place to look for any information regarding the course during the semester, including syllabus, announcements, grades, etc. You will be notified of modifications to the syllabus, classroom locations etc. through your registered email address on Blackboard, and in class.

**Grading:** **Exams** (3, including the final): 20% each. For all exams, the following standard grading scheme applies (+/- will not be used): 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, < 60 = F. **In-class participation** (on-going): 25% for undergraduates vs. 15% for graduate students. **Pop quizzes** (on assigned reading material, 4-6 of them): 15% for undergraduates vs. 10% for graduate students. **Leading paper discussion / paper presentation** (graduate students only; 2 papers each): 15%.

**Exams:** Bring your **student ID, #2 pencil, a calculator, and one Scantron form # F-289** (1/2 page, red print) to every exam. **Other than calculators, no electronic devices are allowed during exams.** Exam grades will be posted as soon as possible. If you suspect that a question was graded improperly, you have one week (from the date of test return) to contact me about it. **Exam dates are non-negotiable;** make-up exams are not given except (1) in the event of illness, in which case a medical doctor's letter is required, or (2) if you have a documented school function (marching band, game), in which case you will need to provide documentation. Make-up exams must be taken within 2–3 days of the original exam date.

**Cheating:** Needless to say, a bad idea. Cheaters will be assigned a zero for the exam in question.

**Students with disabilities:** University policy provides for reasonable accommodations to be made for students with verified disabilities on an individualized and flexible basis. It is the responsibility of any student with a disability to contact the Office of Student Disability Services (662-915-7128). SDS will then contact the instructor through the student by means of an Instructor Notification of Classroom Accommodations form.

<i>Date</i>	<i>Topic(s)</i>	<i>Chapters *</i>
<b>Week 1.</b> Jan 21 & 23	<b>Introduction</b> Diversity  Types of insects & plants	<b>SVD 2.4</b> (p13-14)  <b>SVD 3.1-3.3, 3.6</b> (p29-31, 36, 42)
<b>Week 2.</b> Jan 28 & 30	<b>Introduction</b> How insects find plants  <b>Ecology</b> Basic interactions  Assemblages	<b>SVD 6.1, 6.4, 6.6, 7.1-7.3</b> (p136, 143-151, 158-159, 169-170, 172)  <b>SVD 10.1, 10.3, 10.7</b> (p245-252, 259)  <b>SVD 10.10-10.11</b> (p264-268)
<b>Week 3.</b> Feb 04 & 06	<b>Ecology</b> Molecular ecology  <b>Host races &amp; speciation</b> Host plant selection & evolution, overview of modes of speciation  <b>Fly trap experiment</b> record basic information about plants	<b>SVD 8.1-8.2</b> (p209-211)
<b>Week 4.</b> Feb 11 & 13	<b>Host races &amp; speciation</b> <b>Paper #1</b>  Evolution  <b>Fly trap experiment</b> Final design and scheduling	<b>Paper Discussion 1: Feder et al. (1994) PNAS</b>  <b>SVD 11.2-11.5, 11.7</b> (282-291, 293-295)
<b>Week 5.</b> Feb 18 & 20	<b>EXAM 1, Tues 18 (bring Scantron form F-289)</b>  <b>Fly trap experiment</b> Initiated on Thurs 20	
<b>Week 6.</b> Feb 25 &	<b>Exam 1 recap</b>	

27	<b>Mutualism</b> Plant stems & flowers	<b>SVD 3.4-35., 12.1-12.3, 12.5-12.6</b> (p40-41, 308-320, 322-328)
<b>Week 7.</b> Mar 02 & 05	<b>Mutualism</b> <i>Paper #2</i>  <b>Commensalism &amp; Parasitism</b> Herbivorous insects  Galls	<b>Paper Discussion 2: Jandér &amp; Herre (2010) PRSB</b>  <b>SVD 2.7</b> (p7); <b>SVD 2.1-2.3, 2.6, 13.1</b> (p6-13, 16, 337-338)  <b>SVD 3.5</b> (p41)
<b>Week 8.</b> Mar09-13	<b>SPRING BREAK (no class)</b>	
<b>Week 9.</b> Mar 17 & 19	<b>Co-evolution</b> Arms races; GMT: Overall argument, Raw materials  GMT: Raw materials  GMT: Local adaptation 1	<b>SVD 11.8</b> (p296-298)
<b>Week 10.</b> Mar 24 & 26	<b>Co-evolution</b> <i>Papers #3 &amp; #4</i>  <b>EXAM 2, Thur 26 (bring Scantron form F-289)</b>	<b>Paper Discussions 3 &amp; 4: Whittall &amp; Hodges (2007) Nature; Nash et al. (2008) Science</b>
<b>Week 11.</b> Mar 31 & Apr 02	<b>Exam 2 recap</b>  <b>Co-evolution</b> GMT: Local adaptation 2  GMT: Conceptual framework  <b>Botanic garden field trip planning</b>  <b>NO CLASS, Thur 02 (prep for fieldtrip)</b>	
<b>Saturday</b> Apr 04	<b>Memphis Botanic Gardens, 8:30am–3:30pm</b>	
<b>Week 12.</b> Apr 07 & 09	<b>Plant diversity</b> Recap on Memphis Botanic Gardens trip  <b>Co-evolution</b> <i>Papers #5 &amp; #6</i>	<b>Paper Discussions 5 &amp; 6: Cook &amp; Rasplus (2003)</b>

	<p><b>Fly trap experiment</b> Data manipulation &amp; analyses</p>	<p><i>TREE; Gomulkiewicz et al. (2007) Heredity</i></p>
<p><b>Week 13.</b> Apr 14 &amp; 16</p>	<p><b>Tri-trophic interactions</b>  Papers #7 &amp; 8</p>	<p><b>SVD 10.4, 10.6</b> (p252-258)  <b>Paper Discussions 7 &amp; 8:</b> <i>DeMoraes et al. (1998)</i> <i>Nature; Frago et al. (2012)</i> <i>TREE</i></p>
<p><b>Week 14.</b> Apr 21 &amp; 23</p>	<p><b>NO CLASS, Tues 21</b>  <b>Climate change &amp; biodiversity conservation</b>  Papers #9 &amp; 10</p>	<p><b>SVD 12.7, 13.3, 13.6</b> (p329, 345-350, 357)  <b>Paper Discussions 9 &amp; 10:</b> <i>Parmesan et al. (1999)</i> <i>Nature; Biesmeijer et al. (2006) Science</i></p>
<p><b>Week 15.</b> Apr 28 &amp; 30</p>	<p><b>Climate change &amp; biodiversity conservation</b>  <b>Flytrap Experiment</b> Completion  In-class or remote (on-line) review session</p>	
<p><b>Week 16.</b> <b>May 06</b></p>	<p><b>EXAM 3, Wed 06, 4pm – 7pm (bring Scantron form F-289)</b></p>	

\* From Schoonhoven, van Loon & Dicke (SVD) – check Blackboard for additional reading material (i.e., peer-reviewed papers “**Paper #n**”) that I will upload as PDF files, and flag via ‘announcements’.