Advanced Plant Biology (Biol 369) Fall 2014
Monday 2 – 3:50 Wednesday 2 - 4:50 (lecture & lab), Holt 261
Dr. Chris Ivey, 898-5812, email through Blackboard
Office Hours: M 9-11 & F 8-11, Holt 306 or Holt 373A

Lab manual available from Omicron table, 2nd floor Holt Hall, wildcat card sales only (no cash)

Policies and procedures
Submit assignments through Blackboard unless otherwise noted. Late assignments lose 10% per day, and will not be accepted later than 5 days (including weekends) beyond the due date. No make-up exams or assignments without prior arrangements. Academic dishonesty in any form will be immediately referred to Student Judicial Affairs and students will receive a zero for the assignment. This includes plagiarism, failing to provide proper credit for an idea, copying or borrowing coursework from another student, paraphrasing someone else’s idea without acknowledging the source, copying answers from your text, etc. Another form of plagiarism involves copying text from another source, modifying a few words, and claiming it as your own. There will be no credit awarded for any assignment that involves even a hint of plagiarism. Go out of your way not to be tempted and not to tempt anyone else. Additional information on academic integrity is available in the Code of Students Rights and Responsibilities, which is available from www.csuchico.edu/sjd.

CSU, Chico acknowledges each student’s unique set of abilities and limitations, and works to provide all students with an enriching educational experience. Accommodations will be made, as possible, in cooperation with Disability Support Services (www.csuchico.edu/dss, Student Services Center 170, 898-5959), but it is the responsibility of the student to communicate his/her needs.

Course activities

1. Lab notebook. Students will need a bound, grid-lined notebook for recording data and observations in lab. The notebook includes a table of contents including the title of each lab, the date it was performed, and the page number of that lab entry. Entries into your lab book begin only on right-facing pages; the left-facing page should be blank. Entries contain: introductory and procedural comments your instructor makes about a lab; your questions and hypotheses as appropriate, the exact protocol you used (you may reference your lab manual but record changes); raw and summary data; all sketches, photographs, data tables and graphs are required to have headings (for tables) and captions (for figures); all numerical values should have units; statistical treatments of the data or other analysis, a conclusion, and additional information as indicated in your lab manual. Legible notebooks that adequately meet all these requirements will receive 20 pts. Illegible, unorganized, and/or incomplete notebooks will receive less than 20 pts. Notebooks with exemplary detail and organization displaying obvious extra effort may receive up to 25 pts.

2. Discussions. To improve familiarity with the structure and style of scientific writing, we will read and discuss scholarly papers during the course. In your lab manual are questions about the content of each paper, the answers to which are due before class, and they will not be accepted after that time. In addition, students must submit three content-related questions about the papers that are intended to spark a lively discussion. Papers for discussion are available in the lab manual.


In the text of your paper, cite your sources as the author's last name and the year the article was published, with multiple citations separated by a semicolon (Lee and Richards 1991; Ivey et al. 2004). Give the full citation at the end your paper in a "Literature Cited" section using the following format for chapters in an edited volume and journal articles, respectively: Lee DW, Richards JH. 1991. Heteroblastic development in vines. Pp. 205-243 in: Putz FE, Mooney HA (eds.). The biology of vines. Cambridge University Press, Cambridge.
Avoid quoting directly from the article. Instead paraphrase the essential information using your own words, and then provide a citation. Correct formatting (as above) will help your grade.

On October 16th, submit a paragraph summary of your paper. The paragraph will identify the topic you plan to address, the main arguments you will make in your paper, and include a properly formatted bibliography of the articles you plan to review. Thus, before the paragraph is due, you should (1) choose your topic, (2) choose your papers to review, (3) read your papers, and (4) figure out what you plan to write. I will provide feedback on the topic and structure of your planned paper as well as the literature you have identified so that you have a better chance of receiving full credit on the final product. Be prepared to revise your topic in response to my comments. The best papers address a fundamental question or phenomenon, and review evidence testing hypotheses for its explanation.

Papers and outlines should be submitted electronically via the course website. Late assignments lose 10% per 24-hour period following the beginning of the class period on the due date, including weekends & holidays. Assignments that are more than 5 days late receive no credit.

Papers and paragraphs will be evaluated on coherence, synthesis, formatting, ability to paraphrase relevant information (as opposed to directly quoting from the article), logical flow, responses to my previous comments, insight, editing, writing style, and writing quality. There is no upper or lower page limit on papers, but they should be both thorough and concise.

7. Exams & quizzes. Exams may include a combination of short answer, multiple choice, short essay, data, and practicum questions. They will cover material from all class activities, including readings, lectures, labs, discussions, and anything else from the course. Half of the points awarded on the final exam will cover material from the first two-thirds of the semester. Quizzes will be available online Friday afternoons and run through the following Monday. There will be no makeup quizzes or exams without prior arrangements. Use of notes or other course materials during the quizzes is okay, but you may not discuss quiz questions with other students. Doing so is considered a violation of academic honesty (see above).

8. Participation and attendance. Each week students will be evaluated based on punctuality, preparation, enthusiasm, attendance, and participation. Students can earn either 5 or 0 points for the week, all or nothing. To earn 5 points, a student must be present, prepared, and engaged during the entire period for all class meetings. There are no excused absences, but one week can be missed, for any reason, with no loss of points.

Course Objectives
By the end of the course, students should be able to:

- Draw a plant root and label five tissues
- Draw a plant stem and label five tissues
- Distinguish angiosperm vs. gymnosperm wood
- Name five types of plant anatomical evidence of use in forensic investigations
- Draw a flower and label ten structures
- Draw a growing pollen tube and label five structures
- Diagram the process of angiosperm fertilization
- Diagram cellular processes involved in thigmonastic responses of plants
- Explain the functional significance of thigmonastic stigmas in plants
- Collect and interpret data testing a scientific hypothesis
- Research and write a review paper on a subject in plant biology

Grading:
Participation and attendance 70
Lab Notebook 2 @ 25 points 50
Discussion questions 3 @ 10 points each 30
Quizzes 10 @ 10 points each 100
Exams 2 @ 50; Final @ 100 200
Review paper Paper (75) and Paragraph (25) 100
Total 550

A (92%) B (82%) C (72%) D (63%)
A- (90%) B- (80%) C- (70%) F (<63%)
B+ (87%) C+ (77%) D+ (67%)
## Schedule (subject to change):

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday (2-3:50)</th>
<th>Wednesday (2-4:50)</th>
<th>Reading</th>
<th>Online quizzes</th>
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</thead>
<tbody>
<tr>
<td>1 (25 Aug)</td>
<td>Introduction to course Bryophytes</td>
<td>Bryophyte lab</td>
<td>Chap. 1, 16</td>
<td>Quiz 1</td>
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<tr>
<td>2 (1 Sept)</td>
<td><strong>Labor Day, no class</strong></td>
<td>Seedless vascular plant lab</td>
<td>Chap 17</td>
<td>Quiz 2</td>
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<tr>
<td>3 (8 Sept)</td>
<td>Seedless vascular plants, Gymnosperms</td>
<td>Gymnosperms</td>
<td>Chap 18</td>
<td>Quiz 3</td>
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<tr>
<td>4 (15 Sept)</td>
<td>Discussion – 1 <strong>Questions 1</strong></td>
<td>Flowers, morphology</td>
<td>Chap 19, Williams 2012</td>
<td>Quiz 4</td>
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<tr>
<td>5 (22 Sept)</td>
<td>Flowers</td>
<td>EXAM 1</td>
<td></td>
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<td>6 (29 Sept)</td>
<td>Angiosperm reproduction</td>
<td>Flowers, pollen</td>
<td>Chap 20</td>
<td></td>
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<tr>
<td>7 (6 Oct)</td>
<td>Nastic movement</td>
<td>Thigmonasty, flower age</td>
<td>Pp 678-681</td>
<td>Quiz 5</td>
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<td>8 (13 Oct)</td>
<td>Pollination</td>
<td>Thigmonasty, repeated stimulus</td>
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<td>Review paragraph due</td>
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<td>9 (20 Oct)</td>
<td>Discussion – 2 <strong>Questions 2</strong></td>
<td>Thigmonasty, Ca/Mg ratio</td>
<td>Fetscher &amp; Kohn 1999</td>
<td>Quiz 6</td>
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<tr>
<td>10 (27 Oct)</td>
<td>Forensic botany</td>
<td>EXAM 2</td>
<td>Chap 22</td>
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<tr>
<td>11 (3 Nov)</td>
<td>Tissues, roots</td>
<td>Roots</td>
<td>Chap 23, 24</td>
<td>Quiz 7</td>
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<tr>
<td>12 (10 Nov)</td>
<td>Stems</td>
<td>Stems</td>
<td>Chap 25</td>
<td>Quiz 8</td>
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<tr>
<td>13 (17 Nov)</td>
<td>Leaves</td>
<td>Leaves</td>
<td>Chap 26</td>
<td>Quiz 9</td>
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<tr>
<td>14 (1 Dec)</td>
<td>Discussion – 3 <strong>Questions 3</strong></td>
<td>Anatomy investigation</td>
<td>Willey &amp; Heilman 1987</td>
<td>Quiz 10</td>
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<tr>
<td>15 (8 Dec)</td>
<td>Botany of Beer</td>
<td>Malting &amp; mashing lab</td>
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5 September – last day to drop without a COP  
19 September – Census date: last day to drop without a serious & compelling reason, documented  
19 December (Friday) – Final exam, 12:00-1:50 pm, Holt 261