

BOTANY 130 – Spring 2018

Course Information and Policies

Lecture meets on MWF at 8:50–9:40AM in 145 Birge Hall

Lab sections meet on M&W, discussions on R&F (*consult your timetable for your lab / discussion section times*)

Instructor

Dr. Tom Brandner
tabrandn@wisc.edu
labs 311 / 312
B239 Birge Hall

Course Coordinator

Michael Clayton
clayton@wisc.edu
Honors section
120 Birge Hall
262-2333

Teaching Assistants

James McDaniel
jlmcdaniel@wisc.edu
labs 302 / 304

Tom Thein
tthein@wisc.edu
labs 301 / 306

Michael Peyton
msp Peyton@wisc.edu
labs 303 / 307

Overview and objectives: Botany 130 provides a one-semester introduction to Botany and Plant Biology. The course aims to provide a strong foundation for students in plant biology majors, such as Botany, Horticulture, Agronomy, and Landscape Architecture. To satisfy this aim, Botany 130 covers general biology topics while also surveying plant structure, plant physiology, and plant diversity. Botany 130 aims to build an appreciation for the diversity of the natural world and the critical role of plants in sustaining the earth's biosphere. Botany 130 explores diverse aspects of Botany to provide students with:

- A solid foundation in basic biology on which to build further understanding including basic concepts in cell and molecular biology, genetics, evolution, and ecology
- Understanding of the scientific process and historical aspects of botanical thinking
- Current uses and future needs of plants in our society
- An appreciation for the complexity and beauty of the living world

A note on the different intro biology course sequences at the UW: Botany 130 and Zoology 101/102 together represent a 10-credit, comprehensive, introductory biology course series that is acceptable for almost all biological science majors. These courses are ideal for life science majors who want a diversity-focused course series or who want to take advantage of the curricular flexibility offered by 101/102/130. However, most biological science majors taking a full introductory biology course sequence opt for the Biology 151/152 sequence that duplicates some of the topics covered Zoo101 and Bot130. Botany 130 can be taken to provide breadth for non-science majors, but most non-majors students might prefer to take Botany 100 instead.

Recommended text: *Biology of Plants*, 8th edition, by Raven, Evert, and Eichhorn. Published by W.H. Freeman and Co., New York. Our text is an excellent general botany textbook and a useful reference for anyone interested in the plant sciences.

Required lab manual: *Laboratory Topics for General Botany* is available for purchase (\$19.90) at the Social Sciences Copy Center, room 6120 in the Social Science Building located at 1180 Observatory Drive.

Course Web Sites: For more information consult *Learn@UW* and http://botit.botany.wisc.edu/botany_130.

Grading: Three lecture exams will count for **60%** of the overall course grade. Exams will be machine-graded, multiple choice, and each will cover about one third of the course. The final exam is not cumulative. The three exams will be weighted as follows: your best of the three exams will count as **25%** of the course grade, your middle exam will be **20%**, and the lowest exam score will only count as **15%**. The total of the three exams is 60%, but the weights assure that your final course grade is reflective of your best work rather than anything else. **Note:** Due to limitations of the software, grades reported in Learn@UW will be calculated as if each exam counts as 20%. Your instructor will recalculate your final grade with the proper weights after all three exam scores are reported. **Laboratory work and lab quizzes** will count for **40%** of the final course grade. Your course grade will be determined using the following scale: **A**=90+, **AB**=88-89.99, **B**=80-87.99, **BC**=78-79.99, **C**=70-77.99, **D**=60-69.99.

Honors option: This is an honors available course, and you do not have to be in the Honors Program to participate. Students seeking Honors credit will read "*Under the Green Sky*" by Peter Ward and meet with Mike Clayton at a time to be determined for six meetings (approximately every other week) to discuss the book. There will be no extra graded assignments, but attendance is required to receive honors credit.

Attendance: Attendance at lecture, lab, and discussion is expected and mandatory. A substantial part of the course is interaction with the professor, TAs, and fellow students. Lecture exams will be based on lecture material that may diverge from or include material that is not covered in the recommended textbook.

Academic Integrity: We assume that everyone will conduct himself or herself with highest integrity. We expect you to be familiar with university policies on cheating and plagiarism. <http://students.wisc.edu/saja/misconduct/misconduct.html>

Laptop, tablets & smartphones: You are allowed to use a laptop to take notes as long as you are respectful of your classmates. Using any device to conduct activities unrelated to class (e.g., texting, email, facebook, snapchat, web-surfing, etc.) reflects poorly on your seriousness as a student and is strongly discouraged. Phones should be silenced or turned off during lecture, lab, and discussion.

Spring 2018 – Botany 130 Schedule

Tom Brandner

| week | | DATE | LECTURE TOPICS (tentative) | LAB / DISCUSSION TOPICS |
|--------|-------------|----------------------------|---|--|
| 1 | M W F | Jan 22 Jan 24 Jan 26 | Introduction – course overview How science works | Lab 1. No Lab Lab 2. 1-The Plant Body disc. Supermarket botany |
| 2 | M W F | Jan 29 Jan 31 Feb 2 | Molecules of life Molecules of life (cont.) DNA and protein synthesis | Lab 1. 2-Microscope Intro & 3-Diversity Exploration Lab 2. 4-Organic molecules disc. Lab Quiz 1 – Topics 1, 2 & 4 |
| 3 | M W F | Feb 5 Feb 7 Feb 9 | The plant cell The plant cell (cont.) Movement across membranes | Lab 1. 5-The Plant Cell Lab 2. 5-The Plant Cell (cont.) disc. Plant cell review |
| 4 | M W F | Feb 12 Feb 14 Feb 16 | Respiration: Glycolysis and fermentation Respiration: Oxidative phosphorylation Photosynthesis: The light reactions | Lab 1. 6-Diffusion Lab 2. 7-Respiration disc. Respiration review - diffusion data analysis |
| 5 | M W F | Feb 19 Feb 21 Feb 23 | Photosynthesis: Carbon fixation and variations Mitosis and cytokinesis *** First Lecture Exam *** | Lab 1. 8-Photosynthesis Lab 2. 8-Photosynthesis (cont.) disc. Lab Quiz2 – Topics 5-8 |
| 6 | M W F | Feb 26 Feb 28 Mar 2 | Meiosis and meiotic life cycles Genetics: an intellectual history Mendelian inheritance | Lab 1. 9-Mitosis & Cytokinesis Lab 2. 10-Meiosis - Tetrad Analysis disc. Mitosis meiosis review |
| 7 | M W F | Mar 5 Mar 7 Mar 9 | Introduction to plant tissues Plant development and hormones Anatomy of roots and stems | Lab 1. 11-Genetics Lab 2. 12-Cells & Tissues of the Plant Body disc. Genetics exercises in Room 113 |
| 8 | M W F | Mar 12 Mar 14 Mar 16 | Secondary growth in stems and roots Leaves and transpiration An intellectual history of evolution | Lab 1. 13-Anatomy of the Root Lab 2. 14-Anatomy of the Shoot disc. Lab Quiz 3 – Topics 9-10 |
| 9 | M W F | Mar 19 Mar 21 Mar 23 | Natural selection: analogy and homology Introduction to plant diversity *** Second Lecture Exam *** | Lab 1. 14-Anatomy of the Shoot (cont.) Lab 2. 15-Secondary Growth disc. Sample Anatomy Quiz |
| | | Mar 26 Mar 28 Mar 30 | Spring Break - No Classes | Spring Break - No Lab/Discussion |
| 10 | M W F | Apr 2 Apr 4 Apr 6 | Prokaryotes and cyanobacteria Protists and algae Molds and fungi | Lab 1. 16-Cyanobacteria & 17-Intro to Eukarya Lab 2. 18-The Fungi disc. Lab Quiz 4 – Anatomy - Topics 12-15 |
| 11 | M W F | Apr 9 Apr 11 Apr 13 | Bryophytes: Seedless non-vascular plants Lycophytes: Seedless vascular plants Ferns: Seedless vascular plants | Lab 1. 19-The Heterokonts Lab 2. 20-Green Algae & 21-Plant Intro– Bryophytes disc. Sample Quiz - Non-plant diversity |
| 12 | M W F | Apr 16 Apr 18 Apr 20 | Heterospory and ovule evolution Seed plants: Introduction to the gymnosperms Gymnosperms: The conifers | Lab 1. 21-The Bryophytes (cont.) Lab 2. 22-The Lycophytes disc. Lab Quiz 5 –Non-plant diversity -Topics 16-20 |
| 13 | M W F | Apr 23 Apr 25 Apr 27 | Angiosperms: The flowering plants Angiosperms: Flowers and pollination Angiosperms: Fruits and seeds | Lab 1. 23-Ferns and Their Relatives Lab 2. 24-Seed Plant Intro - The Gymnosperms disc. Sample quiz on plant diversity - Topics 21-24 |
| 14 | M W F | Apr 30 May 2 May 4 | Biomes and global ecology Agriculture and its consequences The modern ecological crisis | Lab 1. 25-The Flowering Plants Lab 2. 25-The Flowering Plants (cont.) disc. Lab Quiz 6 - Plant diversity - Topics 21-25 |
| Finals | R | May 10 | *** Third (Final) Lecture Exam *** | |

IMPORTANT DATES FOR SPRING 2018

- February 1-2 – Thursday & Friday – Lab Quiz 1
- February 22-23 – Thursday & Friday – Lab Quiz 2
- February 23 – Friday *** First Lecture Exam ***
- March 15-16 – Thursday & Friday – Lab Quiz 3
- March 23 – Friday *** Second Lecture Exam ***
- March 26 - 30 – Spring Break Recess – No Class
- April 5-6 – Thursday & Friday – Lab Quiz 4
- April 19-20 – Thursday & Friday – Lab Quiz 5
- May 3-4 – Thursday & Friday – Lab Quiz 6
- May 10 – Thursday *** Third (Final) Lecture Exam *** – 2:45pm