Syllabus:  Biology 239  Introduction to Plant Biology

Lectures and Discussions:  Mon, Wed, Fri  2:15 - 3:15 PM  201 Irving  
Professor:  Dr. Sarah J. Fowell  Office:  326 Natural Sciences  E-mail:  ffsjf@uaf.edu  
Phone:  474-7810  Office Hours:  Mon, Wed  3:30 - 5:00 PM  or by appointment  

Laboratories:  Greenhouse  001 Thurs 2:00 - 5:00 PM  002 Thurs 9:00 - 12:00 AM  
TA:  Janet Jorgensen  Phone:  474-1948  E-mail:  ftlj@uaf.edu  

Required Texts:  

Labs:  Hands-on experience with living specimens and examination of plant cells and tissues under a microscope are essential to a complete understanding of plant biology.  Labs also provide an opportunity for you to conduct experiments and formulate your own hypotheses.  Consequently, labs form an important component of your grade.  Attendance in lab is absolutely required.  Failure to attend lab or turn in lab exercises will result in an incomplete.  So that you will not have to spend additional time on "lab homework," each lab is designed to be completed during the scheduled lab period.  However, the labs will require that you commit yourself for most or all of the three hours.  Do not schedule other activities during any portion of the lab period.  

Attendance:  I regard a university class as an adult audience.  Lecture attendance is entirely your responsibility.  However, it is highly unlikely that you can perform well in this course without attending lectures.  You will be held responsible for all of the information presented during lectures, some of which is not covered in the text.  Therefore, I strongly recommend that you attend every session.  

Posters:  Each of you will research a topic and prepare a poster to exhibit your findings.  Selection of a topic is up to you, but I will be glad to help if you need suggestions.  You may research any subject you like, so long as it pertains to plant biology.  Your job is to explore the subject in greater depth than course lectures or textbooks permit.  The final poster should contain both a concise summary of your findings and some informative graphics.  Completed posters will be displayed for the class in mid-April.  At that time you will have the opportunity to explain what you have learned to your fellow students during an informal, group poster session.  

Grading:  Grades will be weighted as follows:  60% class, 25% lab, and 15% poster project.  The class grade will be determined by performance on three midterm exams and a final exam.  The final examination will focus on material from the last quarter of the course, but you will also be expected to demonstrate a more general, comprehensive understanding of the subjects covered throughout the semester.  The final exam will be given ONLY on the day and time scheduled by the university, so make travel and work plans accordingly.  Lab grades will be based upon lab exercises and a final examination.  The total lab grade will be a sum of all your lab scores, so you cannot afford to miss a lab.  Posters will be judged on the basis of content and presentation.  

3 Midterm Exams:  15% each  
Final Exam:  15%  
Laboratory Exercises/Exam:  25%  
Research Project/Poster:  15%
# Lecture and Lab Schedule

## Part I: Plant Structure

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1/14</td>
<td>Introduction</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>1/17</td>
<td>Civil Rights Day - No Class</td>
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<tr>
<td>1/19</td>
<td>Overview of plant chemistry</td>
<td>Chapter 2</td>
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<td>1/20</td>
<td><strong>Lab</strong> The Flowering Plant Body</td>
<td>Exercise 1</td>
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<tr>
<td>1/21</td>
<td>Structure of plant cells</td>
<td>Chapter 3</td>
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<td>1/24</td>
<td>Plant tissues</td>
<td>Chapter 5</td>
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<td>1/26</td>
<td>Primary growth of stems</td>
<td>Chapter 5</td>
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<tr>
<td>1/27</td>
<td><strong>Lab</strong> Primary Growth: Plant Cell and Tissue Types</td>
<td>Exercises 2 and 3</td>
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<tr>
<td>1/28</td>
<td>Leaves</td>
<td>Chapter 6</td>
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<tr>
<td>1/31</td>
<td>Roots</td>
<td>Chapter 7</td>
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<tr>
<td>2/2</td>
<td>Structure of woody plants I</td>
<td>Chapter 8</td>
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<tr>
<td>2/3</td>
<td><strong>Lab</strong> Roots: Primary and Secondary Growth</td>
<td>Exercise 4</td>
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<tr>
<td>2/4</td>
<td>Structure of woody plants II</td>
<td>Chapter 8</td>
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<td>2/7</td>
<td>Reproduction</td>
<td>Chapter 9</td>
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<td>2/9</td>
<td>Flowers and fruits</td>
<td>Chapter 9</td>
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<tr>
<td>2/10</td>
<td><strong>Lab</strong> Leaves</td>
<td>Exercise 6</td>
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<tr>
<td>2/11</td>
<td><strong>Exam #1</strong></td>
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## Part II: Physiology and Development

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>2/14</td>
<td>Plants and water</td>
<td>Chapter 10</td>
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<tr>
<td>2/16</td>
<td>Photosynthesis I: Harnessing solar energy</td>
<td>Chapter 10</td>
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<tr>
<td>2/17</td>
<td><strong>Lab</strong> Stems: Primary and Secondary Growth</td>
<td>Exercise 5</td>
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<tr>
<td>2/18</td>
<td>Photosynthesis II: Photosynthetic pathways</td>
<td>Chapter 10</td>
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<tr>
<td>2/21</td>
<td>Respiration</td>
<td>Chapter 11</td>
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<td>2/23</td>
<td>Plant carbon balance</td>
<td>Chapter 12</td>
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<tr>
<td>2/24</td>
<td><strong>Lab</strong> Flower Structure and Diversity</td>
<td>Exercise 10</td>
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<td>2/25</td>
<td>Transport processes I</td>
<td>Chapter 12</td>
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<tr>
<td>2/28</td>
<td>Transport processes II</td>
<td>Chapter 12</td>
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<td>3/1</td>
<td>Mineral nutrition</td>
<td>Chapter 13</td>
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<td>3/2</td>
<td><strong>Lab</strong> Photosynthesis and Respiration</td>
<td>Exercise 7</td>
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<td>3/3</td>
<td>Introduction to soils</td>
<td>Chapter 13</td>
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<td>3/6</td>
<td>Development and morphogenesis</td>
<td>Chapter 14</td>
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<td>3/8</td>
<td><strong>Exam #2</strong></td>
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<tr>
<td>3/9</td>
<td><strong>Lab</strong> Transpiration and Xylem Function</td>
<td>Exercise 8</td>
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<tr>
<td>3/10</td>
<td>A brief history of plant evolution</td>
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<tr>
<td>3/13 - 3/19</td>
<td>Spring Break, No Classes</td>
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Part III: Classification and Systematics

3/20 (M) Classification and systematics  Chapter 18
3/22 (W) Kingdom(s) of prokaryotes  Chapter 19
3/23 (Th) Lab Bacteria and cyanobacteria  Exercise 15
3/24 (F) Algae and the origin of eukaryotic cells  Chapter 21

3/27 (M) Nonvascular plants  Chapter 22
3/29 (W) Seedless vascular plants  Chapter 23
3/30 (Th) Lab Algae and Mosses  Exercises 17 and 18
3/31 (F) Seed plants I: Progymnosperms and conifers  Chapter 24

4/3 (M) Seed plants II: Seed ferns, cycads, and ginkgos  Chapter 24
4/5 (W) Seed plants III: Angiosperms  Chapter 25
4/6 (Th) Lab Seedless Vascular Plants  Exercise 19
4/7 (F) Exam #3  

Part IV: Ecology

4/10 (M) Populations  Chapter 26
4/12 (W) Ecosystems  Chapter 26
4/13 (Th) Lab Gymnosperms  Exercise 20
4/14 (F) Poster Session  

4/17 (M) Plant-herbivore interactions
4/19 (W) Mutualism and mycorrhizae  Guest Speaker: Jack Macfarland
4/20 (Th) Lab Angiosperms  Exercise 21
4/21 (F) All Campus Day, No Classes

4/24 (M) Biomes  Chapter 27
4/26 (W) Climate Change  Chapter 27
4/27 (Th) Lab Practicum and Field Trip
4/28 (F) Ice age vegetation of Alaska

5/1 (M) Review for final exam

5/4 (Th) Final Exam: 1-3 PM