INTRODUCTION & PREREQUISITES:
This course examines the functioning of plants, what they do and the mechanisms that explain 'how' they function. These mechanisms are not readily understood without an understanding of aspects of chemistry, physics and biology. The following courses are helpful in this regard: general biology, general chemistry, physics, organic chemistry, cell biology, molecular biology, developmental biology, plant diversity, biochemistry, genetics, physical chemistry. Not surprisingly, none of my students has ever had all of these. The only official prerequisite is cell biology but several students who have not had cell biology have done well in the course and several who have had cell biology have done poorly, even in the parts of the course that deal with cell biology. Students who do well in this course are those who recognize areas where they need more background and search the abundant available resources (internet, textbooks, faculty) to fill in gaps in their understanding. This is something that any biologist should be able to do. If you are concerned about your background please talk with me about it.

GRADING:
Grading is based on the following
......four tests, each worth 30 pts
......the final exam, two parts, each worth 60 pts
......problems, worth in total 30 pts
...... the laboratory, worth in total 30 pts

All grading will be done on a 3 point scale: 3 points earned for an excellent performance and 1 point earned for an acceptable performance.

Tests (120 possible points) will cover material that has been discussed in lecture and the assigned readings, only occasionally covering readings that have been assigned but not discussed in lecture. Each test is worth 30 points hence your grade on a 3 point scale is multiplied by 10.

Final Exam: (120 possible points) The cumulative final exam will have two parts and be given during the scheduled final exam period (May 13th 8-11 AM). One part will be consist of multiple choice, true/false, and fill in the blank questions that deal mostly with the details of the course. The second part will consist of a series of essay questions. Each of the two parts to the final will be graded on a three point scale with this value being multiplied by 20 (maximum points of each part, 60; maximum for the final = 120 pts)

Problems: (30 possible points) these will be of two forms—in-class and problems given out in class and due the next class period. Some will be individual but most can be done in groups. Your average score on a 3 point scale is multiplied by 10 to determine the total points.

Laboratory: (30 possible points) Most labs will have some assignment due the next laboratory period. Your average score on a 3 point scale will be multiplied by 5 to determine half of your laboratory score. The other half comes from a lab final on 7 May that will involve several calculations covered both in the lab and in lecture.

Thus there are 300 possible points, grades are assigned based on the table below

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>250</td>
<td>A</td>
</tr>
<tr>
<td>228</td>
<td>A-</td>
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<tr>
<td>207</td>
<td>B+</td>
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<tr>
<td>185</td>
<td>B</td>
</tr>
<tr>
<td>162</td>
<td>B-</td>
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<tr>
<td>143</td>
<td>C+</td>
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<tr>
<td>121</td>
<td>C</td>
</tr>
<tr>
<td>100</td>
<td>C-</td>
</tr>
</tbody>
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All problems and laboratory assignments must be submitted in an acceptable manner in order to pass the course.

Are there excused absences?

Yes, both for reasons that are planned well ahead and for emergencies (i.e. sickness). If you miss a class you are responsible for making up the problem set (if there was one that day, which there often is) and also for finding out what announcements were made.

What is ‘acceptable’? what is ‘excellent’?

FOR TESTS: Lists of key terms and concepts covered in lecture and/or the textbook will be given to the class in lecture or by email. An ‘excellent’ performance (3 pts) is getting all or nearly all (over 90%) of ‘known questions’ (ones coming from these lists) correct and demonstrating that you can extend your understanding into areas not specifically covered in lecture or in the book. In particular, an excellent performance requires an ability to understand figures from the book. An ‘acceptable’ job (1 point) is learning at least 60% of the terms and concepts and/or showing little ability to apply understanding into new areas. A unacceptable job is not knowing at least 60% of the terms listed on the review sheet and/or not understanding the key concepts that have been covered.

FOR PROBLEMS: The problems require students to work with concepts presented in lecture or in the book. Some will involve computations and interpretation of figures and tables from the text. Problems will be done both inside and outside of class and also both as individuals and groups. An ‘excellent’ job requires that students demonstrate with their answers that they understand and can work with the material presented in lectures and in the reading. Sometime this requires a willingness to search for answers, going beyond just considering your text and notes. An “acceptable” performance would demonstrate that the student is consistently working to understand material.

FOR THE FINAL EXAM: The final exam has two parts;

details--short objective questions (fill in the blank, multiple choice, matching) dealing with terms and figures covered during the course. An excellent job is getting 90% correct, an acceptable job is getting 60% correct.

concepts--essay questions covering the major concepts of the course. An excellent job requires clearly written answers demonstrating understanding of all the major concepts. An acceptable job requires answers that demonstrate understanding of most of the concepts although some of the answers contain flaws, inconsistencies or lack of clarity.

LEARNING OUTCOMES

Upon completing this course students will:

• Be able to describe how plants function at an organismal, cellular and biochemical level.
• Understand how plants: acquire materials, synthesize their chemical constituents, transport materials, reproduce, develop, respond to stimuli.
• Understand terms significant to a basic understanding of plant physiology.
• Be able to comprehend text and figures from the textbook.
• Be able to work with the models and formulae used by plant physiologists to describe the functioning of plants.
• Be able to work with equipment utilized by plant physiologists to study plant functioning and understand techniques used to study functioning.
• Be able to collect, analyze and present data.