This course is designed for majors in biology and certain other sciences who want an overview of the
field of biology. This includes:
• Biology majors with interests more in ecology or organismal biology.
• Students intending to major in a science other than biology and do not need the extended coverage of
biochemistry and molecular genetics that is provided by the Bi251-253 sequence (e.g. Psychology,
Environmental Science, Environmental Studies, Computer and Information Science, Human Physiology
majors).
• Students who are interested in teaching biology.

Students beginning the General Biology sequence with Bi211 need a competency in math and chemistry,
but should continue their studies in these areas if they want to be able to take Bi214 and leave open the
option of becoming biology majors. Bi211 is the only prerequisite for Bi212 and Bi213. Students
completing Bi213 should be eligible to take some, but not all, upper division biology courses. Completion
of Bi211-214 will allow students to take any 300-level biology course and major in biology.

Course Prerequisites
Students need to have taken Ch111 or higher. If you are going to take only one chemistry course, then
we recommend Ch111 rather than the general chemistry sequence. A year of general chemistry
(Ch221-223), with lab, is required for biology majors. Prerequisites for Bi211-214 are strictly enforced

Course Goals

Course Prerequisites

Course Goals

Course Format

Lectures (Monday, Tuesday, Wednesday and Thursday 9:00-10:50 in 129 MCK)
You should do the assigned readings before coming to the lectures. During some of the lectures there
will be activities that will help you to learn difficult concepts; these will often be done collaboratively with
two or three students discussing the problem together for a few minutes before discussing the problem
as a whole class. Your active participation in lecture will help you to better understand the material and
prepare you for exams.
Labs  (Monday and Wednesday 12:00-1:50, 2:00-3:50, 4:00-5:50 in 5 Klamath)
The lab is a small group of about 30 students that meets once a week for 110 minutes. You will explore
the diversity and complexities of cells, model major concepts in cellular biology, discuss issues related to
cellular biology and perform scientific investigations to understand the mechanism of inheritance. You
should attend the section for which you are registered. Attending other sections will only be allowed in
extraordinary situations and with prior approval from your lab instructor. Attendance is mandatory; it is
not possible to make up labs

Course Evaluation

Problem sets (homeworks)
There are four problem sets posted on blackboard during the term. The problems are similar to the types of
problems used in exams. They will be graded on a 5-point scale and are due at the beginning of lecture (see
syllabus for due dates). No late homework will be accepted. The solutions to each week's problems will be posted
on the course website on the day they are due. We will be happy to discuss the problems during our office hours.

Laboratory activities
Lab handouts will be turned in at the end of each lab period or at the beginning of the following lab. The due date
for each lab will be announced in lab. Each lab will be graded on a 5-point scale. For some labs, part of this grade
will be based on your active engagement in the lab. Most labs cannot be made up because they involve additional
materials. Late labs will not be accepted.

Issues project
Each of you will work on an issues project related to cellular biology. You will choose your issue topic during the
week one and work on the project during the entire session. The project, worth 20% of your grade, consists of three
parts: proposal (2%), paper outline (3%) and a paper (15%). Late work on all three parts will only be accepted one
lecture day late and will be deducted 10%

Clickers (personal response systems)
Clickers will be used in almost every class to encourage participation and to provide valuable feedback to
instructors and students. Each student is expected to purchase a clicker for use in this class. You should register
your clicker on the course blackboard site. Questions during lecture that require clickers will most likely be multiple
choice. Points will be earned two different ways: (1) 2-point questions, 2 points will be awarded based on
participation alone, not on whether the question is answered correctly; (2) 4-point questions: 4 points for correct
answer, 2 points for incorrect answer. Total percent for the clicker portion of your grade will be based on 85% of the
total possible points: your clicker grade = total points earned/85% of total possible.

Exams
There will be two exams: a midterm and a final. All exams will be the same format: short-answer. The final is
cumulative. The exams will cover material from all aspects of the course including lectures, labs, readings and
homeworks. Exams will be designed to probe a deep understanding of the concepts and principles discussed, and
an ability to apply the concepts to novel situations rather than a memorization of detail. Exams cannot be made up.

Posting of grades
Scores for assignments and exams will be posted online at least once during the session. We will make an
announcement in class when they are posted. Check your scores when we post them because you will have only
one week after the posting to notify us about a mistake or omission.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory activities</td>
<td>7%</td>
</tr>
<tr>
<td>Problem sets (homeworks)</td>
<td>4%</td>
</tr>
<tr>
<td>Clicker questions</td>
<td>5%</td>
</tr>
<tr>
<td>Exams</td>
<td>64%</td>
</tr>
<tr>
<td>midterm exam</td>
<td>22%</td>
</tr>
<tr>
<td>final exam</td>
<td>42%</td>
</tr>
<tr>
<td>Issues Project</td>
<td>20%</td>
</tr>
<tr>
<td>proposal</td>
<td>2%</td>
</tr>
<tr>
<td>outline</td>
<td>3%</td>
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<tr>
<td>paper (initial paper and final paper)</td>
<td>15%</td>
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</table>
Students with disabilities
The University of Oregon is working to create inclusive learning environments. Please notify us if there are aspects of the instruction or design of this course that result in barriers to your participation. You may also wish to contact Disability Services in 164 Oregon Hall at 346-1155 or disabsrv@uoregon.edu

Professional conduct
Cheating devalues the reputation of our institution, its faculty, its students, and your academic degree. Academic misconduct is particularly unfair for students who do their work with integrity and honor. The University Student Conduct Code (available at http://studentlife.uoregon.edu/StudentConductandCommunityStandards/StudentConductCode/tabid/69/Default.aspx) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students’ obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at www.libweb.uoregon.edu/guides/plagiarism/students.

We want you to learn and to do well in the course, but we will not tolerate academic dishonesty. Sanctions for academic dishonesty will be a lowering of the final grade or failure. If you find yourself in trouble, or if you are aware of academic dishonesty occurring, please talk to one of the instructors. Personal crises do happen. If you are having difficulties that are interfering with your ability to do well in the class, please tell an instructor as soon as possible. We may be able to refer you to someone for help or to make special arrangements if the need is real and if you have done your best to deal with the situation in a timely manner. Finally, we promise to respect you as students and as individuals, and ask that you return that respect to us and to your fellow classmates.

Lecture and Lab Schedule
* please bring your textbook to lab on these days

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Lecture</th>
<th>Lab</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>6/20</td>
<td>L1: Macromolecules</td>
<td>Lab 1: Discovering cells</td>
<td></td>
</tr>
<tr>
<td>Tu</td>
<td>6/21</td>
<td>L2: Cell structure and function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>6/22</td>
<td>L3: Energy, enzymes and ATP; Harvesting chemical energy</td>
<td>Lab 2: Finding references for issues project</td>
<td>Problem set 1 due 10 a.m.</td>
</tr>
<tr>
<td>Th</td>
<td>6/23</td>
<td>L4: Harvesting chemical energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>6/27</td>
<td>L5: Photosynthesis</td>
<td>Lab 3: Modeling cellular respiration*</td>
<td>Issues project proposal due at beginning of lab</td>
</tr>
<tr>
<td>Tu</td>
<td>6/28</td>
<td>L6: DNA structure and the cell cycle</td>
<td></td>
<td>Problem set 2 due 10 a.m.</td>
</tr>
<tr>
<td>W</td>
<td>6/29</td>
<td>L7: Cell cycle including mitosis</td>
<td>Lab 4: Modeling photosynthesis*</td>
<td></td>
</tr>
<tr>
<td>Th</td>
<td>6/30</td>
<td>Midterm exam (lectures 1-6 and labs 1-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>7/4</td>
<td>no class: 4th of July holiday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tu</td>
<td>7/5</td>
<td>L8: Protein synthesis</td>
<td></td>
<td>Problem set 3 &amp; issues project outline due 10 a.m.</td>
</tr>
<tr>
<td>W</td>
<td>7/6</td>
<td>L9: Meiosis and the sexual life cycle</td>
<td>Lab 5: Cell cycle &amp; modeling protein synthesis*</td>
<td></td>
</tr>
<tr>
<td>Th</td>
<td>7/7</td>
<td>L10: Genetics: Mendel’s laws and pedigrees</td>
<td></td>
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</tr>
<tr>
<td>M</td>
<td>7/11</td>
<td>L11: Recombination and mapping</td>
<td>Lab 6: Modeling simple genetic traits &amp; peer review of issues paper</td>
<td>Issues paper draft due in lab</td>
</tr>
<tr>
<td>Tu</td>
<td>7/12</td>
<td>L12: Genetic basis of sex</td>
<td></td>
<td>Problem set 4 due 10 a.m.</td>
</tr>
<tr>
<td>W</td>
<td>7/13</td>
<td>L13: Beyond Mendelian genetics</td>
<td>Lab 7: Modeling complex genetic traits</td>
<td>Final paper due at beginning of lecture</td>
</tr>
<tr>
<td>Th</td>
<td>7/14</td>
<td>Final exam (entire course; exam given at normal lecture time)</td>
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</tr>
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</table>
### Course Packet
This packet contains handouts you will need for labs and issues project instructions.

#### Readings

**Textbook:** The text, *Biological Science* by S. Freeman, 3rd or 4th edition, will be used as a general reference throughout the first three quarters of General Biology. The readings include background material useful for preparing you for lecture and for studying for exams. We don't expect you to remember all the details in this material. A good strategy would be to skim over the entire chapter first, concentrating on the major concepts, then to read more carefully the assigned pages, focusing on the ideas discussed in lecture and lab.

**Course Packet:** This packet contains handouts you will need for labs and issues project instructions.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Readings from 3rd Edition (4th Edition pages will be posted on Blackboard, if needed)</th>
</tr>
</thead>
</table>
| 1       | • Ch 1: read quickly to get an overview of the book and the overall structure of the field of biology. Pay particular attention to the sections on cells (p. 2-4), classification (p. 6-10), and science as a process (p. 11-15). It is highly recommended that you review basic chemistry principles in Ch 2.  
• Ch 5: read the entire chapter on carbohydrates  
• Ch 6: focus on pgs. 95-104 (types, structure of lipids); skim pgs. 105-107 to review diffusion and osmosis  
• Ch 3: read pgs. 43-58 to focus on protein structure and function  
• Ch 4: read pgs. 67-71 for an introduction to nucleic acid structure and function |
| 2       | • Ch 28-32: skim over the chapters to answer questions about kingdoms and Lab #1  
• Ch 7: read the entire chapter on cells; focus on characteristics of prokaryote and eukaryote cells (p. 120-124) and organelles (p. 124-130); skim the remainder of the chapter to gain a deeper understanding of cell dynamics  
• Ch 6: read about cell membranes on pgs. 107-109  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 7 BioFlix Animations: Tour of an Animal Cell, Tour of a Plant Cell |
| 3       | • Ch 2: read pgs. 31-35 to focus on chemical reactions and energy  
• Ch 3: read pgs. 58-64 to focus on enzymes, effects of temperature and pH on enzymes  
• Ch 9: read pgs. 170-175 for basic understanding of ATP and redox reactions |
| 4       | • Most students will have to carefully read Ch 9 on cellular respiration several times. Read the entire chapter fairly quickly the first time to get the general ideas and vocabulary. Then read again more carefully the specific pages that are listed. You must gain a basic understanding of the following material but don’t need to memorize all of the chemicals. Pgs. 175-178 provide a nice overview of cellular respiration, pgs. 180-192 provide more detail of the processes of cellular respiration, and pgs. 192-194 discuss fermentation.  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 9 BioFlix Animations: Cellular Respiration |
| 5       | • Most students will have to carefully read Ch10 on photosynthesis several times. Read the entire chapter fairly quickly the first time to get the general ideas and vocabulary. Then read again more carefully the specific pages that are listed. Pgs. 199-201 provide a nice overview of photosynthesis, pgs. 207-212 (light reactions) and pgs. 213-215 (Calvin Cycle) cover the details of photosynthesis.  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 10 BioFlix Animations: Photosynthesis |
| 6       | • Ch 4: read pgs. 71-75 on DNA structure and function  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 4 Web Animation: Nucleic Acid Structure |
| 7       | • Ch 11: read pgs. 222-226 for an introduction to the cell cycle; pgs. 227-233 for details of mitosis; pgs 233-237 for control of the cell cycle; pgs. 237-240 for cancer and the cell cycle  
• Ch 14: read pgs. 295-313; focus on pgs. 303-307 (DNA synthesis)  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 11 BioFlix Animations: The Phases of Mitosis; Mitosis; Ch 14 Web Animation: DNA synthesis |
| 8       | • Ch 15: read pgs. 316-327 for an introduction to genes  
• Ch 16: read pgs. 329-346 for the details of protein synthesis; pgs. 347-349 discuss mutations  
• Ch 4: read pgs. 76-77 for RNA structure and function  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 16 BioFlix Animations: Protein Synthesis; Web Animation: Transcription, Translation |
| 9       | • Ch 12: read pgs. 243-258 for details of meiosis; pgs. 260-262 discuss mistakes in meiosis  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 12 BioFlix Animation: Meiosis; Ch 12 Web Animation: Meiosis, Mistakes in Meiosis |
| 10 & 11 | • Ch 13: read pgs. 265-274; pgs. 268-272 discuss Mendel’s 1st Law; pgs. 272-274 discuss Mendel’s 2nd Law; B17 discusses some simple rules of probability that are useful for understanding Mendelian genetics  
• Ch 13: read pgs 274-281 for discussion of recombination and gene mapping  
• For more info: study area at [www.masteringbio.com](http://www.masteringbio.com); Ch 13 Web Animation: Mendel’s Experiments, The Principle of Independent Assortment |
| 12      | • Ch 13: read pgs. 276-278 to focus on sex chromosomes and sex-linked inheritance; pgs. 286-289 discuss pedigrees |
| 13      | • Ch 13: read pgs. 281-283 to focus on incomplete dominance, codominance and multiple alleles |