PRINCIPLES OF LIVING SYSTEMS (BIOB 160)
Spring Semester 2011

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Course Overview and Objectives

Learning is not a passive activity, and in this course you should take an active role in your learning. We are here to facilitate your learning, but we ask that you:

- Actively participate in the class meetings and labs
- Be prepared to work cooperatively in groups during class meetings and during the labs
- Take responsibility for coming prepared to class meetings and labs
- Reflect on your own progress and understanding

Biology is a diverse group of disciplines that includes biochemistry, molecular and cell biology, medicine, genetics, evolutionary biology, ecology, behavior, ecosystem biology, conservation biology and more. Biological knowledge is also increasingly important in other disciplines, such as economics, politics, social policy, ethics, business, technology, engineering and design, and architecture. In fact, it is difficult to find any human activity for which an understanding of biology is not increasingly relevant and important.

This is a broad survey course and so we will cover many topics this semester. Biology 160 feeds into many other courses, and is a foundation for Cell and Molecular Biology, Genetics and Evolution, Developmental Biology, Anatomy and Physiology, Ecology and many others.

The goals of this class are for you to:

1) understand how science works (What is science? What is not science?);
2) be able to construct testable questions and interpret data and observations;
3) communicate your ideas orally and in writing;
4) understand the basic chemical proprieties of the main types of molecules that are important for life;
4) understand how energy is captured, stored, used, and passed though biological systems;
5) understand how biological information is preserved, inherited and modified;
6) understand the process of natural selection;
7) understand how the process of evolution works;
8) understand hierarchical levels of biological organization (sub-cellular, cellular, organismal, populations, communities and ecosystems);
9) understand some of the ways that humans affect biological processes on Earth.

Since the material builds upon previous topics it is very important that you to keep up with the readings. If you fall behind, you will find it difficult to catch up. If you have any problems, I urge you to talk with me as EARLY as possible. I will be better able to help you if you talk with me as problems arise; I will be less sympathetic two minutes before a test. If you cannot meet at any of the designated office hours, feel free to schedule an appointment at another time.

For routine questions (e.g. can’t find the lab room, late on an assignment, etc) please contact Mike Krug at michael.krug@umconnect.umt.edu.
Course Schedule
In addition to material covered in lectures, you will be responsible for readings shown below.

Text Book: Reece et al., *Campbell Biology* (9th edition, 2010)

<table>
<thead>
<tr>
<th>Week of</th>
<th>Topic</th>
<th>Reading from Text</th>
<th>Lab Activity</th>
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<tbody>
<tr>
<td>24 Jan</td>
<td>Introduction and Overview</td>
<td>Chap. 1</td>
<td>No labs</td>
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<td></td>
<td>Natural Selection - Dogs</td>
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<td>31 Jan</td>
<td>What is Science? Flies and</td>
<td>Chap. 22</td>
<td>What is Science?</td>
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<td>spiders. Natural Selection -</td>
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<td>Galapagos</td>
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<tr>
<td>7 Feb</td>
<td>Ecology and the Biosphere</td>
<td>Chap. 52</td>
<td>What is Science II:</td>
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<td>The Tasmanian Devil</td>
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<td>14 Feb</td>
<td>Chemistry of Life</td>
<td>Chap. 2</td>
<td>Biomimicry Bingo</td>
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<td>21 Feb</td>
<td><strong>21 Feb - Holiday</strong></td>
<td>Chap. 3</td>
<td>No labs</td>
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<td></td>
<td>What’s so special about water?</td>
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<td></td>
<td><em>Friday 25 Feb – Test 1</em></td>
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<tr>
<td>28 Feb</td>
<td>What’s so special about carbon?</td>
<td>Chap. 4</td>
<td>Water</td>
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<td>7 March</td>
<td>Biological Molecules</td>
<td>Chap. 5-5.3</td>
<td>Poster Instructions</td>
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<td>Carbohydrates and Lipids</td>
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<tr>
<td>14 March</td>
<td>Biological Molecules</td>
<td>Chap. 5.4-5.5</td>
<td>Soap I</td>
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<td>Proteins and Nucleic Acids</td>
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<td>21 March</td>
<td>Cells</td>
<td>Chap. 6</td>
<td>Soap II</td>
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<td></td>
<td><em>Friday 25 March – Test 2</em></td>
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<td>28 March</td>
<td>Energy and Metabolism</td>
<td>Chap. 8</td>
<td>Protein Structure</td>
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<td>4 April</td>
<td><strong>Spring Break</strong></td>
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<td>No labs</td>
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<tr>
<td>11 April</td>
<td>Respiration</td>
<td>9</td>
<td>Influenza and</td>
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<td>Immunizations</td>
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<td>18 April</td>
<td>Eating the sun: Photosynthesis</td>
<td>10</td>
<td>DNA</td>
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<td>25 April</td>
<td>Mitosis and Meiosis</td>
<td>12 &amp; 13</td>
<td>Prep time for posters</td>
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<td>2 May</td>
<td>DNA Replication</td>
<td>16</td>
<td>Poster symposium</td>
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<td>12 May</td>
<td><strong>Final Exam 3:20-5:20 PM</strong></td>
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Grading
Grades in this course will be assigned in the +/- system. Your grade will be based on the following:

- Test 1: 15
- Test 2: 15
- Final: 15
- Mastering Biology Assignments*: 15
- Lab: 40
  100

*The lowest two scores for your Mastering Biology Assignments will be dropped.
The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommasson 154. I am happy to work with you and DSS to provide appropriate accommodations for your learning and testing. For more information, please consult http://www.umt.edu/disability.

**Extra credit opportunities**

You will have chances throughout the semester to do things for extra credit. Many of these will be to attend seminars, meetings, or other activities and then give me a short write-up of the event. I will provide more detailed descriptions of what I am looking for during the semester. I will suggest suitable activities throughout the course, but you should also feel free to run ideas you may have by me and I will decide if they are suitable for extra credit. You will be awarded points for these extra credit activities on a “diminishing returns curve:”

First five: up to 1 point each
Six-11: up to half point each
Thus the maximum you could attain through extra credit activities would be 8 points. Extra credit activities will not be accepted after the last week of class.

**Course Material**

You will be able to access resources for this class on the course Blackboard site. I will post copies of the PowerPoint lectures, labs, as well as other information. I am also recording all the lectures, and you will be able to listen them on iTunes. You can get to both Blackboard and the iTunes lectures through OneStop on the main UM webpage.

You will need your NetID and password for these. If you forgot what these are you can get more information from http://www.umt.edu/it/accessres/NetID.aspx or go to SS 126.

**Mastering Biology**

This is an online program that will give you practice with the material we cover in class and in your readings. You will have regular assignments to do on this site. Many of the questions on the tests and the final exam will be taken from the Mastering Biology assignments. If you took Biology 108/109 with Dr. Murray during Fall 2010, you can use your username and password that you used for his class. If you have not used Mastering Biology before, you will need the code from your Campbell and Reece (9th edition) to log on for the first time. This should be in the Student Access Kit that came with the book (if you bought it new).

**Computers**

The Division of Biological Sciences manages a computer lab that is dedicated to use for biology courses. It is in Health Sciences 114. You need to have an account to use the computers, software, and printers. There are good black and white and color printers in the lab. If you don’t already have an account, a lab monitor can help you set one up between 8 AM – 5 PM.
**A Note on Email and Spam Filters**
All email communication for the course will be sent to your official university email, not other email providers. If you don’t normally check your university email you will miss important emails. You can have your university email forward messages to other email addresses (e.g. gmail, yahoo, etc). When I email the whole class the message will go to lots of email addresses, and some email providers will block this as spam. You will want to check the settings of your spam filters so that they allow such messages.

**Important Date**
11 February (5 PM): Last day to add classes or drop classes with a refund. Last day to change grading options. After this date, you will need special reasons to change grading options (e.g. medical circumstances) and the consent of your academic advisor and instructor. *Note that after this date you cannot change the grading option just because you are not happy with your grades.*

**Plagiarism and Cheating**
Although you will be encouraged to work collaboratively with others in this class and the lab, the *work you hand in must be your own*. A good rule of thumb is that you can work together up to the point of committing words to paper (or word processor). After that, the words you put down should be your own. I remind you of the official University policy on plagiarism: "Plagiarism is the representing of another's work as one's own. It is a particularly intolerable offense in the academic community and is strictly forbidden. Students who plagiarize may fail the course and may be remanded to Academic Court for possible suspension or expulsion (See Student Conduct Code section of this catalog). Students must always be very careful to acknowledge any kind of borrowing that is included in their work. This means not only borrowed wording but also ideas. Acknowledgment of whatever is not one's own original work is the proper and honest use of sources. Failure to acknowledge whatever is not one's own original work is plagiarism." (From The University of Montana Catalog).

If you have any questions about the line between collaboration and plagiarism, see me or your TA before you hand in material. Assignments from two or more students that have significant overlap will be regarded as reflecting a violation of the expectation that students turn in independent work. All the students involved will be given no points for that material, and the violation will be dealt with according to the Student Conduct Code. For more information on the official UM policies on plagiarism and the Student Conduct Code you can refer to:

http://life.umt.edu/VPSA/name/StudentConductCode

Penalties for plagiarism and cheating can be as severe as suspension or expulsion from The University.
In this course you will be using MasteringBiology®, an online tutorial and homework program that accompanies your textbook.

**What You Need:**
- A valid email address
- A student access code (Comes in the Student Access Kit that may have been packaged with your new textbook or is available separately in your school’s bookstore. Otherwise, you can purchase access online at www.masteringbiology.com.)
- The ZIP code for your school: 59812
- A Course ID: MBGREENE2011

**Register**
- Go to www.masteringbiology.com and click New Students under Register.
- To register using the Student Access Code inside the MasteringBiology Student Access Kit, select Yes, I have an access code. Click Continue.

  –OR– **Purchase access online:** Select No, I need to purchase access online now. Select your textbook and whether you want to include access to the eBook (if available), and click Continue. Follow the on-screen instructions to purchase access using a credit card. The purchase path includes registration, but the process may differ slightly from the steps printed here.

- License Agreement and Privacy Policy: Click I Accept to indicate that you have read and agree to the license agreement and privacy policy.
- Select the appropriate option under “Do you have a Pearson Education account?” and supply the requested information. Upon completion, the Confirmation & Summary page confirms your registration. This information will also be emailed to you for your records. You can either click Log In Now or return to www.masteringbiology.com later.

**Log In**
- Go to www.masteringbiology.com.
- Enter your Login Name and Password and click Log In.

**Enroll in Your Instructor’s Course and/or Access the Self-Study Area**
Upon first login, you’ll be prompted to do one or more of the following:
- Join your online course by entering your instructor’s MasteringBiology Course ID.
- Enter a Student ID. Your instructor may request that you enter a special Student ID for this course. If so, be sure to enter this information EXACTLY as instructed.

Click Save and OK.

Congratulations! You have completed registration and have enrolled in your instructor’s MasteringBiology course. To access your course from now on, simply go to www.masteringbiology.com, enter your Login Name and Password, and click Log In. If your instructor has created assignments, you can access them in the Assignments Due Soon area or by clicking View All in this area. Otherwise, click on Study Area to access self-study material.

**Support**
Access Customer Support at www.masteringbiology.com/support, where you will find:
- System Requirements
- Answers to Frequently Asked Questions
- Additional contact information for Customer Support, including Live Chat