Principles of Biology (Biol 101): Summer II 2015
Professor Melissa Ellermann
Mon-Fri 11:30 AM – 1:00 PM; Wilson 128

Instructor: Professor Melissa Ellermann
ellerman@ad.unc.edu
Office Hours: Wilson 235, Wednesdays and Fridays 1-3 PM

Supplemental Instruction TA:
Hayden Saunders (hsaunders@live.unc.edu)
*SI times/locations: TBA (see Sakai for information)

Biology 101 is an introduction to biology at the college level that is intended to serve both majors and non-majors. It is assumed that students in this class do not have a great deal of practice with biology and that any prior experience is likely to be several years ago. Biol 101 students are expected to take a very active role in their learning by completing readings and homework before and after class and coming to class ready to participate directly with peers and through in-class technology. In this highly structured course, we have evidence that every student can achieve if they are motivated to be an active learner!

REQUIRED TEXT AND REQUIRED ONLINE MASTERING BIOLOGY ACCESS:
Feel free to choose a physical book or the ebook.

Required access to Mastering Biology, the online activity and homework tool. This comes included with a NEW physical textbook or ebook. If you have a used physical book, you can buy the Mastering Biology access card at the bookstore. Why this extra tool? Students in previous semesters evaluated it with high marks and felt it kept them on schedule with their learning.

Required reading: Particular chapters are required (see Guided Reading Questions (GRQs) for specific details). You will be expected to have read them and answer the GRQs before class so that you can complete the Mastering Biology homework assignments and be able to participate fully in the in-class activities.

HOMEWORK VIA MASTERING BIOLOGY (MB): (15% of your grade)
Homeworks will be due every day before class (except on exam days) by 11:00 AM. Some assignments will take you as little as 20 minutes and others will take over an hour with the animations and short tutorials interspersed in the homework. It is your responsibility to start it in a timely fashion, so that you finish it by 11:00 AM. To be safe, assume your clock is 5 minutes slower than the official Mastering Biology time. Late homeworks will receive zero credit, even though you can still do them for practice. Do not count on the Mastering program to give an accurate account of how long an assignment will take. These estimates can be wildly off! There will be numerous graded at-home assignments. See my Goal #1 below and realize that I am trying to help you to succeed by giving you these regular assessments. See Sakai for how to register; the course code is: MBELLMANN46064
SAKAI SITE (you will need your onyen to log on):
This site will have postings from my lectures such as outlines, power point slides, and supplemental material I mention in lecture. The GRQs will be posted on this site. I will also post announcements/send emails regarding student concerns on this site. If you do not have an onyen, go to https://itsapps.unc.edu/improv/#UserCreateOnyenPlace:createOnyen. It is your responsibility to check it and your UNC email account regularly.

PARTICIPATION: (10% of your grade)
Most of this 10% will come from Learning Catalytics.

Learning Catalytics (LC): Are you required to come to class? Are you required to pay attention? Are you required to discuss biology with your classmates during class? Nope, I cannot make you do any this. This is your education and you want to be a successful UNC student. As an incentive, 10% of your grade will come from a program called Learning Catalytics (accessed through Mastering Biology) that you use through your laptop or smartphone/tablet.

You will be given 3 freebies this semester! These are mainly meant to cover technical problems that you may run into here and there.

Wifi access: You must have your device connected to UNC-Wifi—be sure to do this for any devices you might use in class before the first day: http://help.unc.edu/help/connecting-to-the-unc-network-getting-started/ Please do not email me to tell me you were absent, we will have so many opportunities for participation that missing one or two days in the semester will not affect your grade. Don’t forget to review these questions/answers when studying!

SUPPLEMENTAL INSTRUCTION (SI):
Your SI sessions will be offered 1-2 times per week, 1 hour per session. The time and location of these sessions will be posted on Sakai. You are not required to attend SI, but it is highly recommended, since this is your opportunity to get more “one-on-one” attention for this course. I suggest you fit this into your schedule and attend weekly as if it is a required class. Your SI instructors’ contact information is listed above.

WHAT YOU SHOULD BRING TO CLASS EVERY DAY:
1. In-class outlines from Sakai (either printed or on laptop).
2. Extra blank paper for drawings, notes, activities etc. (or tablet computer for drawing)
3. 3 x 5 index cards to turn in to me during activities (with or without lines, preferably white).
4. A smart-device: either your laptop/ipad/smartphone enabled for UNC wi-fi access (don’t rely on cellular service)

STUDENT CONCERNS: Many students like to complain that Biol 101 is a “weed out” course. Of course this is not true, but why does it have this reputation? Fact: the average grade in this class is in the C+ range; C+ is not bad—it is average. Yet, many students also earn D’s and F’s in this class. You are wondering...is there a pre-determined number of students that receive a C, D, or F? Nope. See below to see what grade you need to earn. In theory, if the whole class earns A’s, then the whole class is given A’s.
And, this brings me to the goals of my course...

1. This course should prepare you to succeed in future science courses. You should learn how to be an active learner in the lecture hall and you should learn how to actively study. Educational research has shown that students in this course who do reading/homeworks before class, actively participate in class, and review notes regularly can and will succeed. The course is designed to equalize your readiness before class—while you may take several hours reading and preparing, another student may need less time. Yet when you get to class, your effort will pay off as we practice these concepts together and you gain confidence in your ability! How do you know you are learning? When you make mistakes and identify what you don’t know. Making mistakes is KEY to learning. It makes more sense to make mistakes on homeworks and in-class when the stakes are very low, rather than on an exam, right? And what if you don’t plan to take any more science classes? Active learning and studying are skills needed for any discipline. You can achieve these goals through practice. Most students enter college very skilled at remembering and understanding (Regurgitating memorized information.) True learning will take place when you are challenged to apply, analyze, evaluate, and synthesize. I will challenge you to do this. You might find this difficult and uncomfortable, but you will be learning!

2. This course should provide you with the basic language and common themes within the field of biology. For those of you continuing in biology, this is just the tip of the iceberg. For others, this might be your one and only biology course! Our goal will be to touch upon many topics, finding common themes in the chapters we cover, such as how the theory of evolution applies to chapters not specifically about evolution. Thoroughly learning the principles is about making connections between material learned at the beginning, middle, and end of the semester! Practice is key to building a foundation of knowledge (and that is why you do Guided Reading notes, Mastering Biology, in-class activities, quizzes, SI, etc.).

3. This course should excite you about biology. Throughout the semester I hope you will ask yourself and me, why is this relevant to me? Some lessons will be more obvious as they relate to health and medicine. I hope that the biology that we learn this semester will cause you to ask more questions. You might even leave with more questions than answers! I'll continually encourage you to read about biological issues and advances in the popular media. If I succeed in getting you to read some articles on your own, I will be happy!

EXAMS (75% of your grade):

There will be three exams and a final exam given during the session. The format will be multiple choice, so bring two #2 pencils and a scantron form purchased at the bookstore to the exam. Only the final exam is cumulative. Each semester exam will only cover the material specified on the course schedule. For all exams, you will need your PID number as identification on your exam sheet. Additionally, you may be asked to verify your identity, so it is required that you bring your one-card to each exam. Failure to produce a One-Card if asked may result in a zero on that exam.

Test material to study: GRQs, class outlines, Learning Catalytics questions (log in and review) and Power Point slides. Therefore, to succeed in this class, it behooves you to take each reading/homework seriously and actively engage in all class discussions. Also, see the last page of this syllabus.

NO MAKE-UP EXAMS! NO EXAMS GIVEN EARLY!
Your grade will be adjusted based on how many exams you take (see below how grade is determined).

**HOW IS YOUR GRADE DETERMINED?**

**Note:** There will be no changes to HOW your final average is calculated at the end of the semester…so please don’t ask!

**Your final average is calculated:**

If you take all three semester examinations:

The lowest semester exam grade is dropped and the total for the semester = \( (0.25 \times \text{exam}) + (0.25 \times \text{exam}) + (0.25 \times \text{final exam}) + (0.15 \times \text{homework average}) + (0.10 \times \text{participation score}) \)

If you take any two semester examinations:

The two exams you took will count and the total for the semester = \( (0.25 \times \text{exam}) + (0.25 \times \text{exam}) + (0.25 \times \text{final exam}) + (0.15 \times \text{homework average}) + (0.10 \times \text{participation score}) \)

In general, the scale for each letter grade comes very close to a 10-point scale. However, I reserve the right to change that scale since it is impossible to predict the difficulty level of any particular test. I will keep you updated about the estimated scale as the course moves along.

**HONOR CODE STATEMENT:**

“All work done in this class must be carried out within the letter and spirit of the UNC Honor Code.”

**COPYRIGHT POLICY**

All course materials including your class notes and in-class assignments are covered by University Copyright Policy, @http://www.unc.edu/campus/policies/copyright%20policy%2000008319.pdf. This means it is illegal and an honor code offense to share your notes or any other course materials, including MasteringBiology items with anyone not directly affiliated with this particular class. No uploading to non-class sharing sites.
Course Schedule/Topics for Discussion

For each reading assignment, you have a “Guided Reading Assignment” with the same title that you should do BEFORE doing Mastering Homework. See your GRQs for the reading assignments.

The idea is that Mastering will reinforce what you have independently learned from the reading. If you simply hunt and peck through the text to find the answers without doing the reading, you are missing a large chunk of information I expect you to be familiar with. You are ultimately responsible for information in “Guided Reading” as if these are lectures. Not doing these = missing at least a third of the course content.

CLASS MEETING SCHEDULE AND ASSIGNMENTS

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Mastering biology &amp; guided reading assignments to be completed BEFORE this class by 11 am</th>
<th>Topics covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon 6/22</td>
<td>1</td>
<td>Chapter 1</td>
<td>Introduction, Process of science</td>
</tr>
<tr>
<td>Tues 6/23</td>
<td>2</td>
<td>Chapter 2.6-2.8 &amp; Chapter 3</td>
<td>Macromolecules</td>
</tr>
<tr>
<td>Wed 6/24</td>
<td>3</td>
<td>Chapter 4.2-17; 4.22</td>
<td>Cells</td>
</tr>
<tr>
<td>Thurs 6/25</td>
<td>4</td>
<td>Chapter 5.1-5.9</td>
<td>Membrane structure/function</td>
</tr>
<tr>
<td>Fri 6/26</td>
<td>5</td>
<td>Chapters 5.10-5.14; 6.1-6.13</td>
<td>Cellular respiration</td>
</tr>
<tr>
<td>Mon 6/29</td>
<td></td>
<td>EXAM 1 (Lectures 1-5)</td>
<td></td>
</tr>
<tr>
<td>Tues 6/30</td>
<td>6</td>
<td>Chapters 7.5-7.10; 37.19; 38.4</td>
<td>Photosynthesis</td>
</tr>
<tr>
<td>Wed 7/1</td>
<td>7</td>
<td>Chapter 8.1-8.10 + breast cancer article on Sakai</td>
<td>Mitosis and cancer</td>
</tr>
<tr>
<td>Thurs 7/2</td>
<td>8</td>
<td>Chapter 8.11-8.17</td>
<td>Meiosis</td>
</tr>
<tr>
<td>Fri 7/3</td>
<td></td>
<td>HOLIDAY – NO CLASS</td>
<td></td>
</tr>
<tr>
<td>Mon 7/6</td>
<td></td>
<td>EXAM 2 (Lectures 6-8)</td>
<td></td>
</tr>
<tr>
<td>Tues 7/7</td>
<td>9</td>
<td>Chapter 9 (excluding 9.8, 9.10, 9.17-19, 9.23)</td>
<td>Patterns of inheritance</td>
</tr>
<tr>
<td>Wed 7/8</td>
<td>10</td>
<td>Chapter 10.3-10.15</td>
<td>Flow of genetic information</td>
</tr>
<tr>
<td>Thurs 7/9</td>
<td>11</td>
<td>Chapter 10.16; 11.2-11.4 + epigenetics activity</td>
<td>Gene expression &amp; epigenetics</td>
</tr>
<tr>
<td>Fri 7/10</td>
<td>12</td>
<td>Chapter 13.1-13.11</td>
<td>How populations evolve</td>
</tr>
<tr>
<td>Mon 7/13</td>
<td>13</td>
<td>Chapter 13.12-13.18; 14.1-14.6</td>
<td>Evolution &amp; speciation</td>
</tr>
<tr>
<td>Tues 7/14</td>
<td></td>
<td>EXAM 3 (Lectures 9-13)</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Wed 7/15</td>
<td>14</td>
<td>Chapter 15.10-15.14 + NOVA video on dog evolution</td>
<td>Dog evolution and phylogenetic trees</td>
</tr>
<tr>
<td>Thurs 7/16</td>
<td>15</td>
<td>Chapter 36 &amp; Chapter 37.1-37.7</td>
<td>Populations &amp; communities</td>
</tr>
<tr>
<td>Fri 7/17</td>
<td>16</td>
<td>Chapter 21.1-21.12 + NPR podcast on the intestinal microbiome</td>
<td>Digestion &amp; the microbiome</td>
</tr>
<tr>
<td>Mon 7/20</td>
<td>17</td>
<td>Chapter 20</td>
<td>Homeostasis</td>
</tr>
<tr>
<td>Tues 7/21</td>
<td>18</td>
<td>Chapter 24</td>
<td>Immunity</td>
</tr>
<tr>
<td>Wed 7/22</td>
<td>19</td>
<td>Chapter 27.1-27.9</td>
<td>Reproduction</td>
</tr>
<tr>
<td>Thurs 7/23</td>
<td>20</td>
<td>Readings posted on Sakai</td>
<td>Process of Science: Obesity</td>
</tr>
</tbody>
</table>

Mon 7/27 | CUMULATIVE FINAL EXAM, Mon 7/27, 11:30 am – 2:30 pm |
HINTS FOR DOING WELL IN THIS CLASS:

• Read the textbook for each corresponding homework. Take your time and be an active reader. Fill out the “Guided Reading Qs” and add your own notes to them.

• Practice, Practice, Practice. Review your course material multiple times in multiple ways! The more times you review biology, the better it will stick. 1) read it in the book 2) hear it in class 3) review your notes 4) review all powerpoints 5) make flashcards 6) rewrite outlines 7) teach a friend or 8) explain it to the wall! 9) make up quizzes for yourself or a friend that you can do later.

• Review your notes after each class! How long will this take? Set aside 15 minutes and make this a HABIT!! I guarantee that this will pay off.

• Attend each lecture, and pay attention.

• Find a classmate or a group of classmates to study with. Talking about material will significantly enhance your learning, and it is a good way to be sure you took comprehensive notes. Don’t rely on your group…you need to study alone before meeting with them!

• “Reading over your notes” is NOT studying. You need to “quiz” yourself in some way to see what you are retaining from your “reading”. Have you tried drawing the illustrations? Have you constructed flow charts or concept maps? Have you tried explaining the concept aloud? Have you made paper cutouts and tried acting out the process? Have you compared and contrasted major concepts/processes that you have learned? Have you used the book’s website for quiz questions?

• Attend SI every week. It will reinforce the material in a way that we don’t always have time for in lecture. Your SI instructor is really creative and has all kinds of tricks and tips. Check it out every week (even if you don’t have any questions!) Our own research at UNC tells us that the average of students that go to SI perform a half a grade better than the average of students that don’t attend SI.

• Take your Mastering assignments as serious, independent work. Mastering is for you to “master” the material. You only cheat yourself if you do the assignments hunting and pecking for the answers in the book. Read the book and then try to answer from what you know.

• Discuss material and concerns with me during office hours, after class, or by email. I am a really nice person…nobody to be scared of! But… you need to come see me well in advance of an exam. Come see me after the first exam if you did not do well. What suggestions can I have for you if you wait until you did poorly on all three exams?

• Get plenty of sleep before an exam! If you have followed my advice, you should be reviewing notes and relaxing the night before an exam.