Fundamentals of Biology II
BIOL F106X (4 Credits); CRN 33633-33644
Spring 2008

Instructors: Prof. Kristin O’Brien
             Prof. Diane O’Brien

Biol 106X Instructor office: 307B Bunnell Bldg
Phone: 474-5941
Mailbox: 305 Bunnell
Office hours: Mon and Wed 10:30 am – 11:30 pm in 307B Bunnell, or by appointment

Individual Instructor contact info:
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Lab Coordinator:
Dr. Mark Wright
309 Bunnell, 474-6298, fnmvw@uaf.edu

Teaching Assistants (TAs): TA names, lab sections, office hours and contact information will be posted on the course website (Blackboard).


Lab Manual: Available in the UAF bookstore

Readings are listed on the schedule. The text and lab manual will be on reserve in Rasmuson Library.

Lectures: MWF 9:15-10:15 AM in Schaible Auditorium, Bunnell Bldg

Labs: Bunnell 302 and 308. Check Blackboard or the course schedule for the time of your lab section

Computer Labs - Bunnell 301 (access through 305); Bunnell 407 Study Room - Bunnell 301A (access through 305)

Prerequisites: Placement in English 111X; Chem 103 or concurrent enrollment in Chem 105.

ALL COURSE INFORMATION AND MATERIALS ARE WEB-AVAILABLE ON BLACKBOARD!
Course description and philosophy:

Biology 106 is the second semester of the year-long introductory series (Biology 105 and 106). In Biol 106, we focus on what happens inside the organism: the mechanisms that constitute and sustain life. We will explore the chemistry of life and the structure and function of cells and organisms. When you leave the course, you should have a basic understanding of cell biology, gene replication and expression, respiration, photosynthesis, animal physiology, reproduction, and development. You should also leave with a solid understanding of some basic physical and chemical processes that underlie all biological mechanisms.

Biology encompasses an enormous set of subdisciplines. In an introductory course such as this, we must cover a vast range of topics. As a result, we cannot delve into great detail on every topic of interest. One goal of the course is to cover the fundamental concepts, facts, and terms that will allow you to move smoothly to more specialized courses in biology, where you can focus on more specific subdisciplines. Another goal is to expose you to the general challenges of doing science in the laboratory.

Biology is an exciting and dynamic field. New advances in genetics and biotechnology occur at an astonishing pace. More than ever before, there are many careers in which you can contribute to our understanding of how biological systems work. In order to be successful, you need to have a thorough understanding of basic concepts. Is it important for a wildlife biologist to understand photosynthesis? For a doctor to understand evolution? For a geneticist to understand ecology? Yes, on all counts! Every intervention into a biological system – from the wildlife biologist managing moose populations, to the doctor prescribing antibiotics, to the genetic consultant offering advice to would-be parents - has repercussions on many levels of biological organization. A biologist whose view of the field is broad and well-grounded in basic principles is prepared to recognize these implications and make good decisions.

As science progresses, we sometimes discover that long-held beliefs are incorrect, and we find better models to describe biological phenomena. For this reason, you should approach all scientific material with a critical attitude. Ask yourself how we know, and how you would go about testing the validity of the topics presented in lecture.
Assessment:
Your progress in this course will be assessed based on quizzes, exams, class participation through the use of clickers and laboratory assignments. Exams are designed to evaluate your understanding of material presented in lecture and laboratories. The final exam draws from all sections of the course and is intended to test your long-term retention of the material. Problem solving exercises ask you to apply course material in novel ways. Laboratory reports and presentations are intended to improve your ability to communicate scientific findings clearly.

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams (4 @ 100 pts each)</td>
<td>400</td>
<td>42</td>
</tr>
<tr>
<td>Final exam</td>
<td>150</td>
<td>16</td>
</tr>
<tr>
<td>Homework</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Laboratory assignments, reports, presentations</td>
<td>254</td>
<td>27</td>
</tr>
<tr>
<td>Clicker points</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>TOTAL POINTS</td>
<td>944</td>
<td>100</td>
</tr>
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Grades will be assigned based on the percentage of points you earn in class, as follows:

<table>
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<tr>
<th>Grade</th>
<th>% of Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<tr>
<td>B</td>
<td>80 – 89</td>
</tr>
<tr>
<td>C</td>
<td>70 - 79</td>
</tr>
<tr>
<td>D</td>
<td>60 - 69</td>
</tr>
<tr>
<td>F</td>
<td>0 - 59</td>
</tr>
</tbody>
</table>

Homework:
Homework will be posted on the Blackboard web site Fridays by 5 pm. It will be due on the following Wednesday by 5 pm. Homework will generally consist of multiple choice or short answer questions. There will be 10 homework sets worth 10 points each and we will drop the lowest grade. No late homework will be accepted unless arrangements have been made well in advance.

Exams:
Exams will consist of multiple choice questions to be completed within the allotted time.
Laboratory:
Graded laboratory assignments will consist of a combination of pre-lab assignments (which test your preparation for the lab), answers to worksheet questions related to the laboratory activity (due 1 week after lab), and laboratory reports (2). The last laboratory will be devoted to student-led presentations on current topics in biology.

Clickers:
We will be using Turning Point clickers during lecture beginning on Monday, Feb. 11.

Why use clickers? Clickers are an outstanding learning tool. Although standard lectures are an excellent way to learn biology, many studies have shown that students understand and retain knowledge to a greater extent when they participate in the learning process through the use of clickers.

How will we use clickers? During each lecture we will ask one or more multiple-choice questions. Some questions will be straightforward, definition-type questions. Others will require that you use critical thinking skills and apply your knowledge to answer a more complex problem. For some questions, we will ask you to discuss the answer with other students around you before selecting an answer. Clicker questions will be worth 2 points per lecture. We will use them in 27 lectures and your lowest two clicker grades will be dropped. For each question, you will receive ½ credit for responding to the question and full credit for the correct answer.

Obtaining your clicker: If you do not already own a clicker, you can purchase one from the UAF bookstore. The cost is approximately $60. Please do not purchase one online. You must have a Turning Point brand clicker to operate with our system. UAF uses a standardized clicker system, so if you already have a clicker, you do not need to purchase another one! You can use the same clickers for multiple classes.

Registering your Clicker: In order for you to receive credit for your clicker responses, you must provide the instructors with the serial number on the back of the clicker. We will circulate a spreadsheet for you to enter your serial number during the first three lectures of class. You can verify that your clicker is operating properly by testing it with the instructor before lecture on Mondays or during office hours. It is your responsibility to ensure that your clicker is operating. Batteries are available for sale in the UAF bookstore.

Cheating and clickers: You may only use your own clicker. Using someone else’s clicker is considered cheating.

Course Policies:

Late policy and missed exams:
Scheduled absences: If you have a conflict with the exam date, such as an athletic event or travel plans, you must take the exam before you leave. Inform the instructor as soon as possible to schedule an early exam.
Illness: If you are ill on the day of the exam:
   1. You must inform the instructor BEFORE the exam begins. If you can’t reach us on the phone, leave a message.
   2. The makeup exam must be taken within 48 hours of the original exam. It is your responsibility to follow up and schedule an alternate exam.

Late assignments: In general, late assignments will not be accepted. If for some reason you cannot come to class on a day an assignment is due, you must turn in the assignment before it is due. Lab assignments will be collected by your TA at the beginning of lab.

Academic dishonesty: Examples of academic dishonesty include, but are not limited to, cheating on exams or assignments, helping others to cheat on exams or assignments, plagiarizing (using someone else’s ideas, words, or graphics without giving them credit), and feigning an illness to delay an exam. Please read the UAF Student Code of Conduct in the UAF Catalog. If you are caught cheating you will receive an F for the class and the case will be presented to the University Disciplinary and Honor Code Committee.

Disabilities: We welcome students with disabilities and are committed to providing equal access to this course. If you have a disability (including learning disabilities), please inform the instructor in the first 2 weeks of class so we can accommodate your needs. If you have not already done so, you should also contact UAF’s Office of Disabilities Services in the Center for Health & Counseling (474-7043). If you have specific difficulties with test-taking please come to us to discuss them before the first exam.

Laboratories (Bunnell 302 and 308): Lab exercises expand on lecture material and teach basic skills and methodologies. The exercises in Bio 106 were designed to enhance your understanding of many of the more difficult subjects in the course. Some of the labs require that you ask and answer your own questions about biology; in other words, they involve doing science, rather than just reading about it.

Lab attendance is mandatory. There are assignments associated with each lab, and you may not turn in assignments for labs you did not attend. You should expect that questions about lab topics will appear on exams. Many of the lab exercises and projects will be conducted in teams. If you do not attend regularly, you risk placing the quality of other students’ work in jeopardy. Ineffective participation as a member of lab team will result in your name being dropped from group assignments and a zero score on that assignment.

If for some reason you cannot attend your regular lab section, you should attend another lab section that week. Contact the TA of the lab you wish to attend to see if there is room for you. If you miss a lab, you forfeit the points associated with lab assignments for that week. TAs will present course announcements and information important to the lab at the beginning of the lab period, so please be on time.
Blackboard:

Much of the communication and materials for the course will be accomplished through the blackboard web site. It is important that you check blackboard frequently for course announcements and information.

The course website is administered through Blackboard (http://classes.uaf.edu). It will take a few days to register you on the course web site. Until then, you can access the site as a guest by clicking the Preview button on the login page. Once I have entered your name on the website course roster, you can log in directly.

Logging on to the Blackboard web site

If you have used Blackboard previously, your old password will still work. (Remember that your Blackboard password is not necessarily the same as your UAF email password! This is a common source of confusion.) If you have forgotten your Blackboard password, follow the instructions on the Blackboard homepage to reset your password.

If you have never used Blackboard before, follow the directions below:

1. Blackboard will not recognize you until you have activated your UAF email account. If you have not used your UAF email yet, use the online email look up form https://ssl.uaf.edu:1917/email_lookup.html to find your UAF username and activate your account.
2. From the Blackboard homepage, click Login.
3. Enter your UAF username (the first part of your UAF email address, e.g. if your email address is fsxyz@uaf.edu, your user name is fsxyz). If you do not remember your username, you can find it by doing a search on your last name from the Aurora Finger Gateway (http://www.uaf.edu/cgi-bin/afinger).
4. Enter your password. The first time you log on, your password will be either your social security number (no dashes) or your 9-digit campus ID number. Try both. If neither works, read the “Problems logging in???” section on the Blackboard homepage.

The website will post important announcements about scheduling, exams, and assignments. You can also check your grades online. Most documents will be posted as PDF files. You will need Adobe Reader to open them. If you do not already have Adobe Reader, it is available free of charge at http://www.adobe.com/products/acrobat/readstep2.html. When you are finished using the course web site on a public computer, please be sure to log out.

What to do when you need help:

The instructors of this course will make every effort to respond to email questions in a timely manner. However, this is not always possible in such a large course. If you have questions, we also suggest the following:

1) Come to office hours
2) Contact the specific instructor directly to set up an appointment
3) Seek help from other sources including classmates and your TAs

Email Etiquette:

Please check your UAF email often. The instructors of this course may communicate important matters related to the course that you will be responsible for by email. Communicating by email is one of the most important ways we currently communicate in the academic community. However, to communicate effectively, it is very important that you use email appropriately. The following are some simple guidelines to keep in mind:

- Please use proper spelling and grammar and include your signature at the end.
- Although the instructors will make every effort to reply promptly, do not expect an email response sooner than 24 hours.
- Please direct your email questions to the instructor who presented the material you need help with.
- Please be courteous in your letters. Do not communicate any thoughts through email that you would not feel comfortable communicating in person. Think before you send!

Doing well in Biology 106:

There is no trick to excelling in Biology 106X. As for any course, regular class attendance and good study habitats will help you succeed. Here are some specific suggestions:

- **Set aside adequate time for study, lab preparation, and reading.** Bio 105 is a challenging course that covers a wide range of material quickly. To pass the course, you should plan to invest at least 15 hours per week. Make sure you have adequate time for reading, lab preparation, weekly studying, and consultation with your professor and TA. Don’t jeopardize your grades by trying to cram too much into your schedule.
- **Take responsibility for learning.** Your professors can guide and instruct, but ultimately learning is a personal endeavor. No one can make you take an interest in the material, and no one can make you sit in a quiet room studying when you would rather be elsewhere. Whether you succeed or fail in this course, and in college as a whole, is up to you.
- **Attend lecture.** Studies show that students who regularly attend lectures in science courses earn higher grades. Experience tells us that students who attend lecture in Biol 105 earn higher grades than those who do not.
- **Read the book before you come to lecture.** You will retain more of the lecture content if you have already encountered the material in your readings.
- **Keep up on the reading.** Even if you cannot manage to read before you come to class, be sure to read regularly. If you try to assimilate 4 chapters on the day before an exam, it is unlikely that you will retain much of the material.
- **Review your notes.** Don’t wait for an exam to review your notes. Set aside time after each lecture to review your notes and compile questions for office hours.
- **Avoid “cramming” for exams.** Learning takes time and repetition. Few people can retain large amounts of newly-encountered material for long enough to do well on exams. Do yourself a favor and establish a schedule that includes regular reading and review.
- **Discuss and explain.** We learn best by teaching! Whenever possible, challenge yourself to explain the course material to others. Studying in groups provides this opportunity. Or,
• **Relate course material to issues outside class.** Make an effort to connect course material to issues you care about. The point of an education is to give you new, insight into issues that are important to you by giving you depth of understanding. Use what you learn! If you apply the material to topics of interest to you, you will be much more likely to remember the material when tested.

• **Come to office hours.** As you take and review your notes, write questions in the margins or in a special notebook. Come to instructor or TA office hours regularly to discuss your questions. It’s best not to wait until just before an exam to clear up points of confusion.

• **Complete assignments well and turn them in on time.** Don’t throw away easily-obtained points!
## BIOL 106X Summary of Laboratory Assignments

<table>
<thead>
<tr>
<th>Week</th>
<th>Lab</th>
<th>Pre-lab assignment</th>
<th>Pre-lab points</th>
<th>Post-lab assignment</th>
<th>Post-lab points</th>
<th>Total points</th>
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<td>Molecules of Life</td>
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<td>4</td>
<td>WS</td>
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<tr>
<td>4</td>
<td>Cellular Organization and Diversity</td>
<td>WS</td>
<td>4</td>
<td>WS</td>
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<td>14</td>
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<td>5</td>
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<td>WS</td>
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<td>Lab report</td>
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<td>6</td>
<td>Diffusion and Osmosis</td>
<td>WS</td>
<td>4</td>
<td>WS</td>
<td>10</td>
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<tr>
<td>7</td>
<td>Cellular Respiration</td>
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<td>4</td>
<td>WS</td>
<td>10</td>
<td>14</td>
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<tr>
<td>8</td>
<td>SPRING BREAK</td>
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<td>Mitosis and Meiosis</td>
<td>WS</td>
<td>4</td>
<td>WS</td>
<td>10</td>
<td>14</td>
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<td>Gene Expression</td>
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WS: worksheet from lab notebook

TOTAL 254