Biology 115X - Fundamentals of Biology I 
Summer 2009 Course Description and Syllabus

Be aware that we will be covering at least one chapter from the textbook per day – this is an intensive course that completes an entire semester's work in six weeks.

Instructors
Dr. Denise Kind       Adelia Falk
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Office: 309 Bunnell
Phone: 474-6298
Office hours Monday and Wednesday 12-1 or by appointment

Course Materials
Text               Freeman, S. 2008. Biological Science, 3rd ed. San Francisco: Pearson Benjamin Cummings. The textbook comes with access to www.masteringbio.com -you are required to have access to complete homework assignment (more on this below).

Lab manual          Provided. You will need to get a 3 ring binder to store this manual.

Turning Point® clicker The Bookstore carries clickers that are compatible with the receiver we use, so a clicker bought online is unlikely to work. You only need one clicker for all of your UAF classes.

Facilities          Lecture          10:00 -11:50am M T W R in Bunnell 302.
                    Laboratory      1:00 - 4:40 pm T R in Bunnell 302.

Computer labs
Biology Computer Labs- Bunnell 301 and 407.
UAF Student Access Lab- Bunnell 319.
Library Computer Room/Help Desk - Rasmuson Library 404
More information is available at http://www.uaf.edu/dcc/labs/index.html

Lecture outlines: Lecture outlines will be posted ahead of time using UAF’s Blackboard system. You are strongly encouraged to print out the outlines ahead of time to aid your in-class note taking. The outlines are not complete lecture notes and cannot serve as a replacement for attendance at lecture.

Web sites           Course materials will be posted on UAF’s Blackboard systems. To log into it, go to http://classes.uaf.edu/ and log in using your UAF ID and password. If you are using Blackboard for the first time, click on the link for first-time users for information. All course handouts will be posted here.

Homework           Homework will generally be posted and done at your textbook’s website: http://www.masteringbio.com/. You should have access to this website with the purchase of your textbook. If you need to purchase a sand-alone web access because you are sharing a book or have purchased a used book, this can be done through the websites. I am using this website because it allows me to provide you with some outstanding tutorials and other excellent resources from your textbook publishers. You will need to enroll yourself in the course; the course ID is BIOL115XSUMMER2009.

Libraries           Rasmuson Library (summer hours: M-Th 7:30am-9:00pm, F 7:30am-6:00pm, weekends noon-6:00pm, closed July 3-5)
                    BioSciences Library (summer hours: M-F 8:00am-5:00pm, Sun. 1:00 pm to 5:00 pm, closed on Saturdays and holidays)
Course Prerequisites

Enrollment in Biology 115X placement in Math105X or higher, placement in English 111X or higher, and concurrent enrollment in, or prior successful completion of (C or better) Chemistry 105X. Students who do not meet these conditions will be dropped from the course. Exceptions are granted on a case-by-case basis by the instructor.

Course Description

Biology 115X is the first semester of the year-long inquiry into biology. Biology 115X use to be Biology 106X and Biology 116X used to be Biology 105. Biology 115X focuses on structure and function from the molecular level through the level of the individual organism; Biology 116X introduces the evolutionary and ecological processes that shape the biology of organisms and cells. By the time that you finish Biology 115X, you should have an understanding of the chemistry of living organisms, cellular and molecular biology, the structure and expression of genes, and animal form and function. You should have an understanding of how these areas fit together, and how many of the underlying similarities we see across organisms are the result of evolution.

An understanding of the biological processes, structures and functions is not the only goal of the course. There are fundamental skills and concepts that you should gain or refine in an introductory science course. One of the most important things you should continue to refine this semester is your understanding of the scientific method and how it allows science to reach new understanding though careful observation and empirical testing of hypotheses. The skills you learn or refine this year will improve your ability to conduct the types of scientific investigations that are a fundamental part of biology. These include laboratory techniques, basic principles of experimental design and execution, basic data interpretation and analysis, presentation of results in written reports and the ability to find and use scientific literature. They will also enhance your ability to analysis and critically evaluate biological issues and make informed decisions in your own life.

Many fields of biology that you will study this semester have expanded rapidly over the last few decades. Other areas have been studies for over a century. Even these “older” fields of study have undergone recent, rapid expansion with recent technological innovations that allow us to investigate them in new ways. New advances and discoveries are constantly being made and published. When a scientist reads a report or hears of an interesting finding, he or she critically reads and evaluates the reported findings. This is something that I expect you to do it as well; as you read the text, listen to lectures, and participate in lab, you should recognize that all the topics you are studying are based on empirical testing and think carefully about how they have been tested and what current research shows.

Lectures

Active attendance of lectures is strongly recommended. Take notes! Ask questions! Research has shown that people who actively involve themselves with the material during lecture learn and recall much more than people who simply sit and listen. You need to actively work to understand the material. Since this is the case, I will be breaking up the lecture period to ask you questions, carry out simulations, have brief discussions, and do other types of activities. These will never be "busy work"; I will use these teaching and learning tools to identify areas that are unclear to you, help you assess what you have mastered and what you need to study, and provide you with some practice and study tools for particularly challenging topics. Exams will be primarily on material covered in lecture, but may also include some material from the homework or from the book that was assigned but not covered in lecture. In-lecture activities and clicker questions cannot be made up: if you are not there, you will receive a zero unless it is an excused absence which you have discussed with me in advance. You will need to register your clicker on Blackboard before the second day of class.
If you know that you will miss an exam or lab, you must contact me in advance to discuss your problem. Make-up will be offered only under extenuating circumstances and are granted at the instructor's discretion. Some work may be impossible to make up. Exams or labs that are missed without instructor permission will be recorded as a zero. Absolutely no makeup exams will be administered after the exam has been returned to students. Work turned in after it is due (late work) will be recorded as a zero unless you received an extension from the instructor in advance.

Grading

Grades will be based on the percentage of total points earned out of the total possible points based on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>% of Total Points</th>
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<tbody>
<tr>
<td>A+</td>
<td>97-100</td>
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<tr>
<td>A</td>
<td>90-96</td>
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<tr>
<td>A-</td>
<td>88-89</td>
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<tr>
<td>B+</td>
<td>86-87</td>
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<tr>
<td>B</td>
<td>80-85</td>
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<tr>
<td>B-</td>
<td>78-79</td>
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<tr>
<td>C+</td>
<td>76-77</td>
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<tr>
<td>C</td>
<td>70-75</td>
</tr>
<tr>
<td>C-</td>
<td>68-69</td>
</tr>
<tr>
<td>D+</td>
<td>66-67</td>
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<tr>
<td>D</td>
<td>60-65</td>
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<tr>
<td>D-</td>
<td>58-59</td>
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<tr>
<td>F</td>
<td>0-57</td>
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The point breakdown for this course is approximately as follows:

- 400 pts four one-hour exams covering readings, homework, lecture, and lab materials
- 200 pts final two-hour exam (comprehensive)
- 550 pts lab reports & scientific paper
- 50 pts lab practical exam
- 100 pts homework assignments
- 50 pts clicker quizzes and in-lecture work

Academic Honesty

Academic dishonesty will not be tolerated. You are expected to be familiar with the UAF Student Code of Conduct (available on-line and in the UAF Catalog) and to follow it at all times. No collaboration is permitted on exams or quizzes. The use of any reference materials (notes, books, other people, etc.) on exams is academic dishonesty. Although you may work with a lab partner or partners during lab, the report that you turn in must be written independently, in your own words, without any traces of copying. Copying or paraphrasing another student's work as your own is a violation of the Student Code, as is copying or paraphrasing material published in print or on-line. Your homework, also, must be entirely your own work. You are not permitted to use another person's clicker or to allow another person to use yours. Any instances of academic dishonesty of any kind will result in a grade of zero on the work, forwarding of the incident to the appropriate University personnel, and may also result in an F in the course and/or expulsion from the University.

When you need help

I will not know if you are having difficulties with the course material unless you tell me. I want to help you; my primary role in this course is to help you understand biology. I would love to see everyone do well in the course. Ultimately, however, how well you do in the class is not up to me: it is up to you. You have to gain the understanding for yourself. If there is anything I can do to help you with that, PLEASE ASK! If you have questions
or are finding that you are struggling with a particular topic, assignment or question, there are several things you can do.

- If you have a question during lecture, ask! Don't let me plow on ahead if you're lost. My experience has been that if one person is confused, usually 95% of the class is.
- Talk to me after lecture or during office hours, or make an appointment to talk to me.
- Talk to your TA.
- Talk to a classmate. Setting up study groups and explaining things to each other can be very helpful.
- If it is a brief question, e-mail me.

Ask for help right away! I'm happy to answer your questions and help you succeed in the course.

**Tips for success in Biology 115X**

There is no magic secret to doing well in Biology 115X (or any other course). The following list contains advice from previous students who have successfully completed this course (as Biol 106X):

- Always do the reading and go to class.
- Plan enough time into your schedule to do a good job on the labs and homework and to do the reading and study.
- Pay attention in lecture & ask questions when you don't get something. Dr. Kind's tests come mostly from lecture.
- Do the reading before lecture or at least skim it ahead of time & then read it more carefully after lecture.
- Print the lecture outlines out ahead of time and use them while you take notes.
- Take notes. Writing things down yourself in your own words will help you learn and remember it.
- Don't let yourself fall behind.
- If you’re not a “test taker” be sure to do very good on the labs. This will allow you to get a decent grade in the class.
- Don’t give away easy points like clicker questions and homework. Always do them and always do your best on them.
- Don't be afraid to ask Dr. Kind questions! She will help you. Your TA will, too.
- Work through the objectives as a study guide – they really do help when you’re studying for the test.
- If they help you, use study tools like the "Demystified" series (e.g. Biology Demystified), the Biology Coloring Book, etc.
- Use the study tools at the textbook's website.
### Schedule for Biology 115X – Summer 2009

This schedule is subject to change. Any changes will be announced in class. Changes will NOT be posted on-line. Readings listed are in Freeman’s *Biological Science*, 3rd ed. unless otherwise specified. Homework will be available at http://www.masteringbio.com unless indicated otherwise. Exams may include material from lecture, readings, homework and labs.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading/Homework Due</th>
<th>Lab</th>
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<tbody>
<tr>
<td>1</td>
<td>T, May 26</td>
<td>Introduction, Chemistry of Life</td>
<td>Ch. 1 &amp; 2</td>
<td>1 - Scientific Inquiry</td>
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<tr>
<td></td>
<td>W, May 27</td>
<td>Protein and Nucleic Acid Structure and Function</td>
<td>Ch. 3 &amp; 4</td>
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|      | R, May 28  | Carbohydrate and Lipid Structure and Function              | Ch. 5
|      |            |                                                            | Ch. 6 (through p.107) HW 1 due May 31, 2pm                | 2 - Molecules of Life (some will be done during lecture time) & Scientific Literature |
|      | M, June 1  | Exam 1
|      |            | Plasma Membranes, Cell Structure and Function              | Ch. 6 (p. 107 to end), Ch. 7                              |                              |
| 2    | T, June 2  | Cell Structure and Function, Cell-Cell Interactions        | Ch. 7
|      | W, June 3  | Cellular Respiration and Fermentation                      | Ch. 8
|      | R, June 4  | Photosynthesis                                             | Ch. 10
|      |            |                                                            | HW 2 due June 7, 2pm                                        | 4 - Cellular Respiration     |
|      | M, June 8  | Exam 2
|      |            | Mitosis and the Cell Cycle                                 | Ch. 11
|      | T, June 9  | Meiosis                                                    | Ch. 12
|      | W, June 10 | DNA and the Gene: Structure and Repair                     | Ch. 14
|      | R, June 11 | How Genes Work: Transcription and Translation              | Ch. 15
|      |            |                                                            | Ch. 16
|      |            |                                                            | HW 3 due June 14, 2pm                                        | 6 - Gene Expression
|      |            |                                                            | Drafts returned                                            |
|      | M, June 15 | Exam 3
|      |            | Control of Gene Expression in Bacteria and Eukaryotes      | Ch. 17
|      |            |                                                            | Ch. 18
|      | T, June 16 | Analyzing and Engineering Genes                            | Ch. 19
|      | W, June 17 | Animal Form and Function, Water and Electrolyte Balance    | Ch. 41
|      |            |                                                            | Ch. 42
|      | R, June 18 | Animal Nutrition                                           | Ch. 43
|      |            |                                                            | HW 4 due June 21, 2pm                                        | GM Foods II                 |
| 5    | M, June 22 | Exam 4
|      |            | Gas Exchange and Circulation                               | Ch. 44
|      | T, June 23 | Electrical Signals & Nervous Systems                        | Ch. 45
|      | W, June 24 | Animal Sensory Systems and Movement                        | Ch. 46
|      | R, June 25 | Chemical Signals and Endocrine Systems                     | Ch. 47
|      |            |                                                            | HW 5 due June 28, 2pm                                        | 10 - Anatomy & Physiology II |
|      | M, June 29 | Animal Reproduction and Development                        | Ch. 48
|      |            |                                                            | Ch. 21 (sect. 21.1 AND pp.445-448) Ch. 22 (pp.457-463)      |                              |
|      | T, June 30 | Immune System                                             | Ch. 49
|      | W, July 1  | FINAL EXAM - COMPREHENSIVE                                  | Lab Practical Exam                                          | 5                            |