Biology 141
Introductory Biology I with Laboratory
Spring Semester 2002

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Office Hours: Tuesdays and Thursdays 10 a.m. -12 noon *and* by appointment

Lecture Hours: Monday, Wednesday, Friday 11:45a.m. - 12:35 p.m. **Room**: Pierce 102
Lab Hours: Monday 2:00 - 5:00 p.m. **Room**: Pierce 125

Required Text: (available at bookstore)

Biology, 5th ed. Campbell, Reece, and Mitchell. Benjamin/Cummings Publishing Company, Inc. 1999.

Required Lab text (available at bookstore)

Investigating Biology, 3rd ed. Morgan, Judith Giles and M. Eloise Brown Carter. Benjamin/Cummings Publishing Company, Inc. 1999. *Used lab manuals are not acceptable in this course.*

Recommended Materials: (available at bookstore and on reserve at the library)

Student Study Guide for Biology 5th ed. by Martha R. Taylor.

A Short Guide to Writing about Biology 4th ed. by Jan A. Pechenik

A Guide to Biology Lab 3rd ed. by Thomas G. Rust

Course Plan:

1. The objective of this class is to learn the core concepts of several fields of Biology and to discuss issues relevant to these fields including social and environmental issues. There is no prerequisite for this course.

2. Attendance at all lectures and labs is required. The Biology Department Absence Policy is detailed at the end of the syllabus.

3. Your success in learning the material is dependent on reading the text, attending class, taking good notes, attending SI sessions, and participating in discussion. All lectures are structured to allow time for questions and discussion. Open discussions that are informative and thought provoking will happen only if you come to class prepared. You must work to understand the ideas, not just memorize the material. You are encouraged to come to my office hours for additional discussion.

4. Supplemental Instruction is provided for this course. The S.I. leader will hold regular meetings to review course material. Also you are encouraged to form study groups and to work with your peers. However all work turned in is expected to be of your own thoughts and construction.

5. Included in your textbook is a CD-ROM, the Interactive Study Partner, and a one-year subscription to *The Biology Place* web site. These study aids contain practice quizzes, a glossary, exercises, animations, and lab simulations. Use them, along with the Student Study Guide, to supplement your studying.

6. A LearnLink Conference entitled "141 Ostrow" has been set up for this class. You can access it by going to the following folders: Public Conferences/ Oxford College/Class Conferences/ Oxford:Biology. Put the conference on your LearnLink desktop. Check the conference daily for announcements and feel free to post class-related notices/questions to it!

7. In the lab, we will be working with potentially infectious microbes and dangerous materials. **Food and drinks are absolutely prohibited!** It is imperative that you read the lab before attempting the experiment.

8. Cheating is not acceptable. You must abide by the Honor Code. Your signature on items turned in for credit (examinations, homework, lab work) attests to your upholding the Honor Code.

9. Beepers and cell phones are not allowed. Laptop computers are allowed if they are quiet.

10. I do not provide back-tests for this class. If you know of any back-tests for this class, please let me know and then I will make them available for the whole class.

11. Grading

Your grade in the course will be based on a point system with an approximate total of 675 points. The scale is:

90-100% = A
80-89% = B
70-79% = C
60-69% = D
<60% = F

Plus and minus grades are given.

3 lecture exams	43%	300 points	
3 lab exams		21%	150 points
1 final exam		21%	150 points
5 writing assignments		5%	25 points
1 lab investigation		7%	50 points
Total		100%	675 points

Tests

There will be three lecture exams, three lab exams and a Final. Lecture exams will include multiple choice questions, questions requiring short answers, and longer essay questions. Lab exams have both a written part and a practical component. The Final exam will be comprehensive. Exams are held on Thursday mornings at 8am in P102. Tests will be taken at the scheduled time. **There will be absolutely no makeup tests!** If you are too sick to take a test **you must let me know prior to the test**; otherwise you will receive a 0 for that test**!**

Writing assignments

Scientific Literature and Research Exercise (5 points)

The objective of this exercise is to acquaint you with the Oxford College Library scientific literature holdings and how to conduct a scientific literature search. On Tuesday February 5, we will meet in the Library 2nd floor Videoconferencing Center at which time you will get a worksheet that is due in class on Monday Feb. 11.

Lab writing assignments (20 points)

There is a writing assignment associated with four of the lab exercises. Each of those weeks, you will write one or two sections of a scientific paper. Writing assignments are due the beginning of the next lab period after the exercise is completed.

Lab Investigation

Starting in week 9 you will conduct a self-directed laboratory research project. Using the skills learned from the writing assignments, you will write a complete scientific paper presenting the results obtained in your experiment. You will present your project to your classmates in lab on April 1st. The complete paper will be due April 8th.

Class Participation

The final grade you receive can be influenced by your attendance and class participation.

Little flower – but if I could understand
What you are, root and all, and all in all
I should know what God and man is

– Lord Tennyson

STUDENT'S GUIDE TO BIOLOGY 141

Welcome to Biology 141! Introductory Biology 141 is designed for students who **plan to major in biology**, **attend professional school in a health related field, or have a strong background in biology** and have chosen biology to fulfill their distribution requirements (or just for the joy of it). This may be one of the more difficult courses you will take, demanding that you not only learn detailed and complicated information, but that you also organize this information within the major concepts of biology. This information will be essential to your success in other biology courses, where your competence in basic biology will be assumed. In addition many of you will be taking examinations to enter graduate or professional schools, and the knowledge you gain here will be required later.

Studying. If you are an average reader, you should spend about **8 hours a week** outside class working in BIO 141. If you are a slow reader, you will have to spend more time. Whatever you do, do not allow yourself to fall behind during the first couple of weeks, as it will be extremely difficult to catch up. Similarly, cramming, or pulling an all-nighter, does little good before an exam in this course, because you must be mentally alert during the test. Start studying 7 days before the test instead of just 3 days.

The best overall study **approach is to read assignments over quickly at first, like a novel, for an overview. Take complete notes. After class, read the assignment more carefully, jotting down questions or areas of confusion for later checking and review**. Review your notes daily. Recopy your notes to cement the material. After you are reasonably confident of your knowledge, **arrange to have a study buddy ask you questions**. Answer the questions in the book, the study guide, and CD-ROM. Be sure you understand **terminology**, and that you have carefully reviewed and understand **diagrams** in your text and class handouts. It is helpful to **prepare your own tables and diagrams** as a study aid and review for much of the material in BIO 141.

College courses generally require you to know much more material, and the material is presented at a much **faster** pace than in high school. This means it is more difficult to catch up if you fall behind. In BIO 141 it is also necessary to demonstrate thinking, as well as memorization. **Memorization** may be a skill that your mastered in high school and it is still very important, but it **is not sufficient** in college. You must be able to demonstrate that you understand concepts and that you can apply them, as well as simply stating them. You will gain experience with this in the classroom, laboratory and on examinations.

One of the most common problems for good students in introductory biology is their **familiarity** with the subject. They are confident that they understand the material and are prepared for a test, because they recognize all the terms, and the concepts make sense. **Don't be lulled into thinking that familiarity is the same as knowledge**. You will be asked to differentiate between very similar answers, to provide complete, thorough and precise answers. Don't be caught wishing you had really studied! If you do not understand everything in this section, you should ask for clarification.

Course Schedule
Biology 141
Spring Semester 2002

Week	Day	Date	Topic	Book Pages
1	Wed.	Jan. 16	Introductions; Themes in Biology	Chap. 1
	Fri.	Jan. 18	The Scientific Method/ Survey	13-18
2	Mon.	Jan. 21	No Class (MLK Day Holiday)	
	Wed.	Jan. 23	The Chemistry of Life: inorganics	28-34; 37-8; 43-5
	Fri.	Jan. 25	The Chemistry of Life: carbohydrates and lipids	58-68
3	Mon.	Jan. 28	The Chemistry of Life: proteins and nucleic acids	68-79
	Wed.	Jan. 30	The Cell: The Unit of Life	Chap. 7
	Fri.	Feb. 1	Membrane structure	130-135
4	Mon.	Feb. 4	Membrane transport	136-144
	Tues.	Feb. 5 (8:30- 9:30 a.m.)	Scientific Literature and Research (Meet in the Library Videoconferencing Center)	(Handout)
	Wed.	Feb. 6	ATP, enzymes, and electron carriers	88-97; 147-52
	Thurs.	Feb. 7	**EXAM I 8:00 - 9:30 a.m. (through membrane transport)**	
	Fri.	Feb. 8	Cellular respiration I – Glycolysis	152-6
5	Mon.	Feb. 11	Respiration II - Transition and the TCA Cycle	156-8; *
	Wed.	Feb. 13	Respiration III - Electron Transport Chain	156-61
	Fri.	Feb. 15	Review of Respiration	161-6
6	Mon.	Feb. 18	Energy for Life: Photosynthesis	168-175
	Wed.	Feb. 20	Photosynthesis I: light dependent reactions	176-9
	Fri.	Feb. 22	Photosynthesis II: light independent reactions	180-185
7	Mon.	Feb. 25	Review of Respiration and Photosynthesis	Chaps. 9, 10
	Wed.	Feb. 27	Continuity of Life: Mitosis and Cell division	Chap. 12
	Thurs.	Feb. 28	**EXAM II 8:00 - 9:30 a.m. (through photosynthesis)**	
	Fri.	Mar. 1	Continuity of Life: Meiosis and Life Cycles	Chap. 13
8	Mon.	Mar. 4	Mendelian Genetics I	239-44
	Wed.	Mar. 6	Mendelian Genetics II	244-7
	Fri.	Mar. 8	Non-Mendelian Genetics	247-51; 261-3; 268-71

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Spring Break March 11-15

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9	Mon.	Mar. 18	DNA and chromosomes	278-283; 344-6
	Wed.	Mar. 20	Replication	284-291
	Fri.	Mar. 22	The Central Dogma: Transcription	296-302
10	Mon.	Mar. 25	The Central Dogma II: Translation	304-11
	Tues.	Mar. 26 (8:15-9:30 a.m.)	Scientific Data Presentation Workshop (Meet in the Humanities Multimedia Center)	
	Wed.	Mar. 27	The genetic code and mutations	298-9; 271-74, 312-6
	Fri.	Mar. 29	Control of gene expression	337-341; 352-7
11	Mon.	Apr. 1	Review of genetics	
	Wed.	Apr. 3	Colonization of Land	536-43; 546-51
	Thurs.	Apr. 4	**EXAM III 8:00 a.m. - 9:30 a.m. (through genetics)**	
	Fri.	Apr. 5	Bryophytes and seedless vascular plants	552-9
12	Mon.	Apr. 8	Seed plants	Chap. 30
	Wed.	Apr. 10	Plant structure	670-88
	Fri.	Apr. 12	Transport/ nutrition in plants	700-11, 714-17, 720-26
13	Mon.	Apr. 15	Plant Growth and Development	736-48; 762
	Wed.	Apr. 17	Habitats	1026-30; 1034-47
	Fri.	Apr. 19	Ecosystems	Chap. 54
14	Mon.	Apr. 22	History of Evolutionary Thought	414-21
	Wed.	Apr. 24	Evidence for evolution	422-6; 457; 464-6; 476-80
	Fri.	Apr. 26	Ecology: dynamics	1043; 1048-50; 1086-92; 1097; 1122-24
15	Mon.	Apr. 29	Review for Final	
	Wed.	May 1	No Class (Reading Day)	
Finals		Mon. May 6	**FINAL EXAM 2:00 – 5:00pm (comprehensive)**	

* Scientific Literature and Research Exercise Due

BIOLOGY 141 — LABORATORY SCHEDULE — Spring 2002

Date		Lab Topic (Lab #)	Writing Assignment
Jan.	22, 24	Scientific Investigation (1) (sign up for Tuesday or Thursday 2:30-5:30 pm)	Results
Jan.	28	Enzymes (2)	Materials and Methods
Feb.	4	Microscopes and Cells (3)	Figure & Table
	5	Tues. (8:30- 9:30 a.m.) Scientific Literature and Research (Meet in the Library Videoconferencing Center)	Handout
	11	Diffusion and Osmosis (4)	Introduction; References Cited
	14 (Thurs. 8:15-9:30 am)	**LAB EXAM 1 (labs 1, 2, 3)**	
	18	Photosynthesis (6)	Discussion
	25	Plant Growth (20.A) Introduction to Lab Investigation	Investigation Proposal & materials needed
March	4	Mitosis and Meiosis (7)	
	11	No Lab (Midsemester Break)	
	18	Start Lab Investigation (20.4)	
	21 (Thurs. 8:15-9:30 am)	**LAB EXAM 2 (labs 4, 6, 7, 20.A)**	
	25	Plant Diversity I: Bryophytes and Seedless Vascular Plants (15)	
	26 (Tues. 8:15-9:30 a.m.)	Scientific Data Presentation Workshop (Meet in the Humanities Multimedia Center)	
April	1	Investigation Symposium (no foolin')	
	8	Plant Diversity II: Seed Plants (16)	Investigation Paper
	15	Plant Anatomy (19)	
	22	Aquatic Ecology (handout)	

29 LAB EXAM 3 (15, 16, 19, Ecology) (3 p.m)