

Biology 141 General Biology I

Syllabus

Fall Semester 2002

Professor: Dr. M. Eloise Brown Carter

Office: Pierce Hall #105

Phone: (770)784-8343

Lecture Hours: Monday, Wednesday, Friday 11:45 a.m. – 12:35 p.m.

Room: Pierce 102

Lab Hours: Monday 2:00 – 5:00 p.m.

Room: Pierce 125

Office Hours: Monday and Wednesday - 12:45 to 1:30 p.m.. Students are encouraged to see Dr. Carter during class to make appointments for other times.

Required Text: *Biology*, N.A. Campbell, 2002, 6th edition, Benjamin/Cummings Publishing Co., Inc. Study Guide is available for sale in the bookstore and is on reserve in the library.

Required Lab Text: *Investigating Biology*, 4th ed. Morgan, Judith Giles and M. Eloise Brown Carter. Benjamin/Cummings Publishing Company, Inc. 2002. *Used lab manuals may not be used.* **Optional Lab Supplement:** Rust, T.G., A Guide to Biology Lab, Southwest Educational Ent.

Aug.	28	Science as a Way of Knowing	1
	30	Major themes in Biology	1
Sept.	2	LABOR DAY	
	4	Hierarchies: beginning with biological chemistry and water	2,3
	6	Building biological macromolecules: carbohydrates and lipids	4,5
	9	Proteins and nucleic acids	4,5
	10 th	8:15 - 9:30 am Scientific Literature and Research Meet in Library Study Room	Handout
	11	Structure and function revealed in cells	7
	13	Membrane structure; cell transport	8

	16	Complete transport; problems	8
	18	Fundamentals of energy transformations: enzymes, ATP and electron carriers	6
	19 th (Thur)	EXAM I 8:00 - 9:30 a.m. (through membrane transport)	
	20	Cellular respiration I – Glycolysis	9
	23	Cellular respiration II - Transition and Krebs Cycle	9
	24 th	<i>8:15 - 9:30 a.m. Scientific Data Presentation Meet in Pierce 206</i>	
	25	Cellular respiration III - Chemiosmosis and the Electron Transport System	9
	27	Preview and recapitulation: Accounting Day	
	30	Homage to photosynthesis	10
Oct.	2	Photosynthesis I: the light dependent reactions	10
	4	Photosynthesis II: the light independent reactions and variations (C4 and CAM)	10
	7	Review and recapitulation: Problems	
	9	Cell reproduction: mitosis	12
	11	Sexual reproduction: meiosis	13
	14	***FALL BREAK***	
	16	Chromosomal mutations and gametogenesis	13, 14
	17(Thurs.)	EXAM II 8:00 - 9:30 a.m. (through photosynthesis)	
	18	Mendelian inheritance, a new vocabulary and paradigm	14
	21	Understanding the basis of inheritance	14,15
	23	The buffet of genetic expression	14,15
	25	DNA structure and replication	16
	28	Gene to Protein I: transcription and the genetic code	17
	30	Gene to Protein II: translation and genetic mutations	17
Nov.	1	Control of gene expression	19
	4	Review and recapitulation: Genetics	
	6	Charles Darwin and the changing paradigm	22
	7(Thur)	EXAM III 8:00 – 9:30 am (through genetics)	
	8	Evidence for evolution	22,24,25

	11	The power of molecular evolution	25
	13	Bryophytes and seedless vascular plants	29
	15	Sexual reproduction in seed plants	30,38
	18	Review of plant evolution	
	20	Plant structure and function	35
	22	Transport in plants	36
	25	Ecology I: population and community dynamics	52,53
	27-29	***THANKSGIVING BREAK***	
Dec.	2	Ecology II: ecosystem structure and function	54
	4	Ecology III: nutrient cycling	54
	6	Ecology IV: review & recapitulation	
	9	The Big Themes Revisited	

***** FINAL EXAMINATION***Tuesday, December 17, 9:00 a.m. to 12:00 noon**

BIOLOGY 141
LABORATORY SCHEDULE
Fall 2002
Dr. Eloise Carter
Dr. Nitya Jacob

<u>Date</u>	<u>Lab Topic (#)</u>	<u>Writing Assignment</u>
Sept. 3, 5*	Scientific Investigation (1)	Introduction
9, 10	Microscopes & Cells (3)	Review table, Library reserve +
16, 17	Diffusion & Osmosis (4)	Materials & Methods
23, 24	Enzymes (2)	Results, Figures & Table
30, Oct. 1	Cellular Respiration (5)	Discussion
Oct. 3(Thur.)	LAB EXAM - 1,2,3,4 (8:15-9:30am; 9:30-10:45am)	
7, 8	Photosynthesis (6)	
14,15	**FALL BREAK**	
21,22	Research Project Plant Development (20)	Proposals, List of Materials
28, 29	Mitosis and Meiosis (7)	Comparison table+ Questions
31 (Thur.)	LAB EXAM (2, 6, 7) (8:15 – 9:30 a.m.; 9:30 – 10:45 a.m.)	
Nov. 4,5	Research Symposium	Scientific Presentation & Paper
11,12	Plant Diversity I: Bryophytes and Seedless Vascular Plants (15)	Papers Due 11/16 Outline+
18,19	Plant Diversity II: Seed Plants (16)	Outline+
25,26	***THANKSGIVING BREAK***	

*Monday lab will meet on Thursday morning (9/15) from 8-10 am this week only due to Labor Day.

Dec. 2,3 Plant Anatomy (19) Review Table+

10(Tues.) **LAB EXAM (15, 16, 19)**
(8:15 a.m. - 9:30 a.m. and 9:30 a.m. - 10:45 a.m.)

BIO 141 laboratory meets in Pierce 125

+These assignments are not handed in.

STUDENT'S GUIDE TO BIOLOGY 141

Welcome to Biology 141! The information in this handout and accompanying materials must be read and followed by all students in Introductory Biology. If you do not understand everything in this handout, you should ask for clarification.

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.

Course Objectives. In Biology 141 students are introduced to basic concepts in biology following the hierarchy of life from basic biological molecules, to cell structure and function, fundamentals of genetics evolution and organismal diversity (specifically plants). Students will master detailed information within the broad themes of unity and diversity, structure and function, and evolution.

The laboratory component of the course emphasizes student use of scientific methods of inquiry, fundamental concepts and techniques in biology, and communicating scientific results through laboratory presentations and scientific writing.

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.

The best overall study **approach is to read assignments over quickly at first, like a novel, for an overview. Then read more carefully, jotting down questions or areas of confusion for later checking and review.** After you are reasonably confident of your knowledge, **arrange to have a study buddy ask you questions.** Answer the questions in the book and study guide. 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 which you 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 common problems for some 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!

Supplemental Instruction. is provided for all students in BIO 141. The instructor will explain this important program that provides assistance for all students who wish to improve their performance in biology.

Examinations. The lecture exams will be a combination of multiple choice, short answer and short essay questions. Exams will cover all material covered in lecture in addition to assigned readings in the text. The final examination is comprehensive. Students should feel free to ask for clarification about any question during the exams.

Scientific Writing and Laboratory Project. Students will write one section of a scientific paper for four laboratory exercises. Students will propose and implement an independent investigation as a research project. For this laboratory, they will prepare a symposium presentation and write a complete scientific paper. Specific instructions will be provided in lab.

Honor Code. All examinations and work for credit in this course come under the regulations of the Honor Code. Your signature on your work attests to your upholding the Honor Code.

Absences. The policy on absences is provided in a separate handout. Unexcused absences or a failure to follow the procedures outlined in that handout will result in a reduction in your grade. Any questions about absences should be asked immediately.

Evaluation. Students are evaluated on their performance in the classroom and laboratory. The assignment of points will be:

300 points	3 lecture exams
150 points	3 laboratory exams
175 points	final examination
25 points	scientific writing
65 points	lab project

715 points	total

Final grade determination:

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

Plus and minus grades are given.

08/02