

Biology 141 General Biology I
Syllabus
Spring Semester 2001

Professor: Dr. M. Eloise Brown Carter

Office: Pierce Hall #105

Phone: (770)784-8343

Lecture Hours: Monday, Wednesday, Friday 10:05 a.m. – 10:55 a.m.

Room: Pierce 101

Lab Hours: Wednesday , 2:00 – 5:00 p.m.

Room: Pierce 125

Office Hours: Monday, Wednesday, and Friday. *On Wednesdays Dr. Carter will be available during office hours in the O'Kelly Library.* Students are encouraged to see Dr. Carter during class to make appointments for other times.

Required Text: *Biology*, N.A. Campbell, 1999, 5th 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*, 3rd ed. Morgan, Judith Giles and M. Eloise Brown Carter. Benjamin/ Cummings Publishing Company, Inc. 1999. *Used lab manuals may not be used.*

Optional Lab Text: Rust, T.G., *A Guide to Biology Lab*, Southwest Educational Ent.

			Chapters
Jan.	17	Science as a Way of Knowing	1
	19	Major themes in Biology	1
	22	Hierarchies: beginning with living chemistry and water	2,3
	24	Building biological macromolecules: carbohydrates and lipids	4,5
<i>Thurs., 25th 8:15 - 9:30 am Scientific Literature and Research</i>			<i>Handout</i>
<i>Meet in the Humanities Multi Media Lab</i>			
	26	<i>No class: Reconciliation Symposium</i>	
Feb.	29	Proteins and nucleic acids	4,5
	2	Structure and function revealed in cells	7
		Membrane structure	8

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5	Cellular transport	8
7	Complete transport; problems	
<i>Thurs., 8th 8:15 - 9:30 a.m. Scientific Data Presentation</i>		
<i>Meet in the Humanities Multi Media Lab</i>		
9	Fundamentals of energy transformations: enzymes, ATP and electron carriers	6
12	Cellular respiration I - Glycolysis	9
14	Cellular respiration II - Transition and the Krebs Cycle	9
15 (Thur.)	EXAM I 8:00 - 9:30 a.m. (through membrane transport)	
16	Cellular respiration III - Chemiosmosis and the Electron Transport System	9
19	Preview and recapitulation: Accounting Day	
21	Homage to photosynthesis	10
23	Photosynthesis I: the light dependent reactions	10
26	Photosynthesis II: the light independent reactions and variations (C4 and CAM)	10
28	Review and recapitulation: Problems	
March 2	Cell reproduction: mitosis	12
5	Sexual reproduction: meiosis	13
6 (Tues.)	EXAM II - 8:00 - 9:30 a.m. (through photosynthesis)	
7	Chromosomal mutations and gametogenesis	13, 14
9	Mendelian inheritance, a new vocabulary and paradigm	14
12-16	***SPRING BREAK***	
19	Understanding the basis of inheritance	14,15
21	The buffet of genetic expression	14,15
23	DNA structure and replication <i>Paper Workshop - Library 2-3 p.m.</i>	16
26	Molecular genetics I: transcription and the genetic code	17
28	Molecular genetics II: translation and genetic mutations	17
30	Control of gene expression	19

Apr.	2	Review and recapitulation: Genetics	
	4	Charles Darwin and the changing paradigm	22
	6	Evidence for evolution	22,24,25
		<i>Research papers due in class</i>	
	9	The power of molecular evolution	25
	10(Tues.)	EXAM III - 8:00 - 9:30 a.m. (through genetics)	
	11	Adaptations to the land environment	29
	13	Bryophytes and seedless vascular plants	29
	16	Sexual reproduction in seed plants	30,38
	18	Plant structure and function	35
	20	Pollination biology	30,38
	23	Transport in plants	36
	25	Ecology: ecosystem structure and function	54
	27	Ecology: population and community dynamics	52,53
April	30	Review and recapitulation: The Big Themes Revisited	

***** FINAL EXAMINATION*** Friday, May 4th, 2001 - 9:00 a.m. - 12:00 noon**

**BIOLOGY 141
LABORATORY SCHEDULE
SPRING 2001**

Dr. Eloise Carter

<u>Date</u>	<u>Lab Topic (#)</u>	<u>Writing Assignment</u>
Jan. 24	Scientific Investigation (1)	Introduction; References Cited
31	Microscopes and Cells (3)	Review table ⁺ Library reserve
Feb. 7	Diffusion and Osmosis (4)	Discussion
14	Enzymes (2)	Results; figure and table
20(Tues.)	LAB EXAM (1,2,3,4) (8:15 - 9:30 a.m.)	
21	Respiration (5)	Research Proposals with Materials List submitted on LL prior to lab
28	Photosynthesis (6)	Title page; Materials and Methods
March 7	Respiration Research Project (5) <i>Power Point Workshop (optional)</i>	
14	*SPRING BREAK***	
21	Mitosis and Meiosis (7)	Comparison table + <i>Rewrites Due</i>
23	<i>Paper Workshop 2-3pm</i>	
27(Tues.)	LAB EXAM (5, 6, 7) (8:15 a.m. – 9:30 a.m.)	
28	Research Symposium	Presentations, Abstracts

April 4	Plant Diversity I: Bryophytes and Seedless Vascular Plants (15)	Outline ⁺ <i>Research Paper due April 6th</i>
11	Plant Diversity II: Seed Plants (16)	Outline ⁺
18	Plant Anatomy (19)	Review Table ⁺
25(Wed.)	LAB EXAM (15, 16, 19) (3:00 p.m. - 4:30 p.m.)	

⁺These assignments are not turned in for a grade.

BIO 141 laboratory meets in Pierce 125.

Laboratory Manual: *Investigating Biology*, third edition, J.G. Morgan and M.E.B. Carter, Benjamin Cummings Publishing, 1999. *"Used" lab manuals may not be used in the laboratory.*

OPTIONAL: Rust, T.G., *A Guide to Biology Lab*, Southwest Educational Ent.

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 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, because you must be mentally alert during the test.

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 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 questions during the exams about any question that is unclear.

Scientific Writing and Laboratory Project. Students will write one section of a scientific paper for four laboratory exercises. Students will 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
50 points	lab project

700 points	total
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Final grade determination:

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

Plus and minus grades are given.

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ABSENCE POLICY - Biology Department

All students are expected to attend all lecture and laboratory sessions. However, emergencies may arise which will necessitate absences from class. **Students are allowed 4 cuts in lecture and NO CUTS in lab.** Students may only miss lab without penalty in cases of illness, family emergency or a school sponsored event which is cleared with the professor in advance. Students are responsible for all material which is covered in laboratory and lecture. When possible, students will be allowed to "make-up" laboratory material missed due to an excused absence, however, because of the nature of laboratory material, actual "make-up of missed activities is usually impossible.

PENALTIES

Students who exceed the 4 cut limit in lecture for whatever reasons or have an unacceptable absence from laboratory will have their FINAL grade reduced 5 points per absence. Students who miss 2 labs without acceptable reasons will fail the course (see below).

LECTURE ABSENCES:

THERE ARE NO EXCUSED ABSENCES FOR LECTURE. Each student may be absent four times without penalty. These four cuts may be used for any reason: illness, studying, travel, family emergency, etc. However, ANY additional cuts will result in grade reduction. USE YOUR CUTS JUDICIOUSLY, e.g. for sick leave only.

ACCEPTABLE LABORATORY ABSENCES

Although no discretionary absences, i.e. "cuts", are allowed regarding laboratory, on rare occasions, illness, family emergencies, or certain school sponsored events may make it necessary for a student to miss a laboratory session. The instructor MUST be notified prior to the day of the absence in all but the most extreme emergencies.

In all cases, the final decision regarding whether or not an absence is acceptable will be made by the instructor.

AN UNACCEPTABLE ABSENCE FROM LABORATORY RESULTS IN A FIVE POINT REDUCTION IN THE FINAL GRADE. TWO UNACCEPTABLE LABORATORY ABSENCES RESULT IN FAILURE OF THE COURSE.

MISSED TESTS

Ordinarily, tests cannot be made up, however, this is up to the instructor. If a student misses a test, and the absence is acceptable the missed test will not count either for or against the student. If the absence is not excused the grade will be a zero. Students are cautioned that any excuse for missing an exam will come under severe scrutiny by the instructor. **THE INSTRUCTOR MUST BE NOTIFIED PRIOR TO THE TIME OF THE EXAM, AND THE INSTRUCTOR MAKES THE FINAL DECISION REGARDING WHETHER OR NOT AN ABSENCE IS ACCEPTABLE.**

Laboratory tests which are missed for a reason that is excused MUST be made up. The instructor must be notified prior to the time of the test.

RELIGIOUS HOLIDAYS:

Students must notify the instructor one week in advance if they intend to be absent for a religious holiday.

TARDINESS

Being late to class is rude and distracting. Continued tardiness by any student will result in the assignment of absences and ultimately a reduction in the student's grade. Three tardies equal an absence. The tardy student is responsible for notifying the instructor that she/he entered the classroom late and, therefore, was not absent. The instructor reserves the option of excluding a person from further classroom or laboratory participation if the student is continuously tardy.

Falsification of information regarding absences from class or laboratory will be considered as a breach of academic integrity.

CLASSROOM AND LABORATORY GUIDELINES

Department of Biology

- I. Eating and drinking are not allowed in either classrooms or laboratories. Therefore, do not bring food items and beverages to class or laboratory. Remember that the use of tobacco in any form is forbidden in Pierce Hall.
- II. Students are expected to wear appropriate attire in classrooms and laboratories. This certainly includes the wearing of shoes.
- III. Students must be safety conscious at all times but especially in the laboratories. Special procedures will be reviewed during laboratory sessions as needed.
- IV. All students are requested to help with housekeeping in the classroom and laboratory.
- V. In Biology 142, 121, and 122 certain designated dissection specimens may be taken from the laboratory with the instructor's permission. The instructor will identify those specimens which may be removed for study elsewhere. These specimens must be returned on or before the time the instructor announces for their return.
- VI. Except for the exceptions noted above (V) materials may not be taken out of the laboratories. This includes microscopes, microscopic slides, demonstration notes and materials, charts, and all other items which are to be found in the laboratory.
- VII. Violation of any regulation noted in Sections V and VI above will be treated as a breach of academic integrity. Therefore, such violations will be immediately reported to the Honor Council.