

Biology 141 – Introductory Biology I Course Syllabus Fall 2004

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Office Hours: TTh 9:30-10:30 AM or by appointment at other times
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Lecture: MWF 9:35-10:25AM, Room 102, Pierce Hall

Laboratory: Wednesday 2:00-5:00 PM, Room 125, Pierce Hall

Required Textbooks:

1) *Biology*, N.A. Campbell and J. B. Reese. 2002. Sixth edition. Benjamin/Cummings Publishing Co., Inc. An accompanying Study Guide is also available for purchase at the bookstore and is on reserve in the library.

2) Lab Text: *Investigating Biology*, Judith G. Morgan and M. Eloise Brown Carter. 2002. Fourth edition. Benjamin/Cummings Publishing Co., Inc. *Used lab manuals may not be utilized.*

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

Biology 141 - Fall 2004 Lecture Schedule

Date	Topic	Assigned Reading
W, Aug 25	Science as a way of knowing	Chapter 1
F, Aug 27	Biological organisms: Major themes	Chapter 1
M, Aug 30	The chemical essentials: water	Chapters 2 and 3
W, Sep 1	The chemical essentials: carbon	Chapter 4
	Macromolecules – carbohydrates and lipids	Chapter 5
F, Sep 3	Macromolecules – proteins and nucleic acids	Chapter 5
M, Sep 6	LABOR DAY - no class	
W, Sep 8	The Cell: Structure and function	Chapter 7
F, Sep 10	Cell membrane structure	Chapter 8
M, Sep 13	Cell membrane transport	Chapter 8
Tues, Sep 14	8:15-9:30 am <i>Scientific data presentation</i> <i>Meet in Pierce 206</i>	
W, Sep 15	The source of cellular energy	Chapter 6
Thurs, Sep 16	EXAM I : 8:00-9:30 AM (covers through membrane transport)	
F, Sep 17	Cellular respiration I – glycolysis	Chapter 9

Biology 141 - Fall 2004 Lecture Schedule (continued)

<u>Date</u>	<u>Topic</u>	<u>Assigned Reading</u>
M, Sep 20	Cellular respiration II – Transition and Krebs cycle	Chapter 9
<i>Tues, Sep 21</i>	<i>8:15-9:30 am Scientific literature and research Meet in Pierce 206</i>	
W, Sep 22	Cellular respiration III – Chemiosmosis and Electron Transport Chain	Chapter 9
F, Sep 24	Review and recapitulation	
M, Sep 27	The importance of photosynthesis	Chapter 10
W, Sep 29	Photosynthesis I: Light-dependent reactions	Chapter 10
F, Oct 1	Photosynthesis II: Light-independent reactions Variant forms of photosynthesis (C4, CAM)	Chapter 10
M, Oct 4	Review and recapitulation	
W, Oct 6	Cell duplication: Mitosis cell cycle	Chapter 12
F, Oct 8	Cell duplication: Sexual reproduction, meiosis	Chapter 13
M, Oct 11	FALL BREAK – no class	
W, Oct 13	Chromosomal mutations and gametogenesis	Chapters 13, 14
Thurs, Oct 14	EXAM II : 8:00-9:30 AM (covers through photosynthesis)	
F, Oct 15	Inheritance according to Mendel	Chapter 14
M, Oct 18	The physical basis of inheritance	Chapters 14, 15
W, Oct. 20	An array of genetic phenomena	Chapters 14, 15
<i>Thurs, Oct 21</i>	<i>8:30-9:30 am Power Point instructional workshop Meet in Pierce 206</i>	
F, Oct 22	DNA structure and replication	Chapter 16
M, Oct 25	Gene to Protein I: transcription and genetic code	Chapter 17
W, Oct 27	Gene to Protein II: translation and genetic mutations	Chapter 17
F, Oct 29	Control of gene expression	Chapter 19: p.362-365; 367-368
M, Nov 1	Review and recapitulation: genetics	
W, Nov 3	Charles Darwin and the changing paradigm	Chapter 22
F, Nov 5	Evidence for evolution	Chapters 22 Chap 25: p. 484-494
M, Nov 8	Molecular evolution	Chap 25: p. 497-499
Tues, Nov 9	EXAM III : 8:00-9:30 AM (covers through genetics)	
W, Nov 10	Bryophytes and seedless vascular plants	Chapter 29
F, Nov 12	Sexual reproduction in seed plants	Chapters 30 Chap 38: p. 783-788; 789-793

Biology 141 - Fall 2004 Lecture Schedule (continued)

<u>Date</u>	<u>Topic</u>	<u>Assigned Reading</u>
M, Nov 15	Review of plant evolution	
W, Nov. 17	Plant structure and function	Chap 35: p.720-738
F, Nov 21	Transport in plants	Chap 36: p. 752-764
M, Nov 22	Ecology I: Case Study I	Ch 52: p. 1156-1171 Ch 53: p. 1174-1184 p. 1186-1191
W, Nov 24	THANSGIVING BREAK – no class	
F, Nov 26	THANKSGIVING BREAK – no class	
M, Nov 29	Ecology II: Case Study II	Chapter 54
W, Dec 1	Ecology III: Ecological concepts, carbon cycle	Chapter 54
F, Dec 3	Ecology IV: review and recapitulation	
M, Dec 6	Re-visiting the big themes	

***** FINAL EXAMINATION***Tuesday, December 14, 9:00 a.m. to 12:00 noon**

Syllabus continues on next page

BIOLOGY 141
LABORATORY SCHEDULE
FALL 2004
Dr. Eloise Carter and Dr. Nitya Jacob

<u>Date</u>	<u>Lab Topic (#)</u>	<u>Writing Assignment</u>
Aug. 31, Sept. 1	Scientific Investigation (1)	Title page; Materials and Methods
7,8	Microscopes and Cells (3)	Review table; Library reserve+
14,15	Diffusion and Osmosis (4)	Results; Figure and Table
21,22	Enzymes (2)	Introduction; References Proposal for Respiration
28(Tues.)	LAB EXAM (1,3,4) (8:15 - 9:30 a.m.; 9:30 - 10:45 a.m.)	
28,29	Cellular Respiration (5, Ex. 5.2)	Discussion; References
Oct. 5,6	Mitosis and Meiosis (7)	Comparison Table +
12,13	FALL BREAK	
19,20	Research Project: Genetics; Power point workshop	
26(Tues.)	LAB EXAM (2, 5, 7) (8:15-9:30 a.m.; 9:30 - 10:45 a.m.)	
26,27	Molecular Biology (10)	TBA
Nov. 2,3	Research Symposium	Scientific Presentations
9,10	Plant Diversity I: Bryophytes and Seedless Vascular Plants (15)	Outline+
16,17	Plant Diversity II: Seed Plants (16)	Outline+ Research due in lab.
23,24	THANKSGIVING BREAK	
30, Dec. 1	Plant Anatomy (19)	Review Table+
Dec. 7(Tues.)	LAB EXAM (15, 16, 19) (8:15 - 9:30 a.m.; 9:30 - 10:45 a.m.)	

+These assignments are not turned in for a grade.

***Digital cameras and camera phones may not be used in lab!**

STUDENT'S GUIDE TO BIOLOGY 141

Welcome to Biology 141! Please read and follow the information in this handout and any accompanying materials. You are responsible for understanding all of the information presented here, so please ask for clarification if needed.

Course Objectives: The purpose of this course is to give you, the student, a firm foundation in biology. To study living organisms, the knowledge of cell structure and function is vital. Firstly, I would like you to develop an understanding of how basic molecules make up the structure of a cell and how these molecules govern cell function. Secondly, this course will help you comprehend crucial tasks conducted by cells, particularly how cells transport components across membranes, and how energy is generated within cells. Thirdly, you will learn the basic mechanisms of cell duplication, inheritance of biological traits and processing of genetic information. A fourth objective of this course is to direct you to use your knowledge of cellular mechanisms towards understanding the concepts of evolution, ecological communities, and diversity in the biological world. Finally, a very important objective of this course is teaching you to “think and act like a scientist” through methods of scientific inquiry and the practice of deductive reasoning. Both lecture and laboratory are designed to accomplish the above goals. Upon grasping these fundamental themes of biology, you will be prepared to further probe into more intricate and specialized areas of this field.

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. This may be one of the more difficult courses you will take. The course demands that you learn detailed and complicated information, organize this information within the major concepts of biology, and apply your knowledge. In other biology courses your competence in basic biology will be assumed, therefore it is crucial for you to succeed in this course. Many of you will be taking examinations to enter graduate or professional schools, and the knowledge you will gain here will be required later.

Some tips for studying: Biology 141 is an intensive course and requires time. To perform well in this course, you must manage your time appropriately. You must have a proper study plan. The following are some good study habits that will help you succeed in Biology 141:

- ❖ Keep up with assigned readings. The readings listed against each lecture in the syllabus must be done BEFORE the lecture.
- ❖ Take good notes. In lecture, I will explain the most significant concepts from your readings. At times I will present examples that may not be given in your textbook. You are responsible for all of this information. Ask questions in class to help you connect with the concepts.

- ❖ Connect the lecture notes to your readings. For the test, you are responsible for information in the textbook as well as the lecture notes. Make sure that you are able to grasp the major concepts thoroughly and in detail. In addition, connect the concepts learned in lecture to the lab exercises.
- ❖ Review material on a regular basis. Study the diagrams in your text and lecture handouts. Practice writing out pathways and linking concepts. Attend your SI sessions on a regular basis. Take advantage of my office hours to get individual direction.
- ❖ Keep two things in mind. One - learn terminology and most importantly, understand the relevance of that terminology to biological function. Second – this course is designed to make you think and not just to have you memorize facts. Memorizing facts is important to establish a basis for your knowledge but it is not sufficient. You must be able to use your knowledge to think logically and analytically. Many of the test questions will revolve around applying your knowledge. Therefore you should be confident of what you know and what it means.
- ❖ Lab is equally important. The laboratory component of this course is intensive and requires time as well. Please read your lab manual BEFORE lab and pay attention to the details. Take good notes during the lab and take time to make detailed observations. Keep up with answering questions in the lab manual. Make use of open lab time.

Supplemental Instruction (SI) is provided for all students in Biology 141. I will explain this important program that provides assistance for students who wish to improve their performance in biology. Your SI leader is Emily R. Smith.

Absences: The policy on absences is provided in a separate handout. Unexcused absences in lecture, lab, examinations 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. It is your responsibility to be aware of the policy.

Examinations: The lecture exams will be a combination of multiple choice, short answer and short essay questions. Exams will cover all material in lecture in addition to assigned textbook readings. The final examination is comprehensive. If you have any doubts regarding the exams, please feel free to ask.

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

Cell Phones: Cell phones must be turned off during lecture and lab. Cell phones are not permitted in the classroom during lecture and laboratory examinations.

Honor Code: Regulations of the Honor Code apply to all work for credit in this course, including lecture and lab examinations. Please pledge all of your work with your signature to indicate that you have followed the rules of the Honor Code.

Office Hours: I would like to encourage you to meet with me in person about any concerns or questions that may arise during the semester. I have scheduled specific office hours but if these times are not suitable for you, please do not hesitate to make an appointment with me for a different time.

LearnLink Class Conference: A class conference labeled “Jacob 141” has been set up for this course on LearnLink. Please use the conference regularly to communicate with each other and to ask questions. I will use this conference to correspond with you about items we may have missed in class or lab. The syllabus and weekly lab instructions will also be posted under the Biology 141 conference – check the folders.

Evaluation: Students are evaluated on their performance in the classroom and the laboratory. The following is the distribution of points:

Lecture exams (3)	300 points
Laboratory exams (3)	150 points
Final exam	175 points
Scientific writing	30 points
Lab project	<u>60 points</u>
Total	715 points

Final grade determination

90 - 100% A

80 – 89% B

70 – 79% C

60 – 69% D

<60 F

Plus and minus grades are given