

BIOLOGY 181 General Biology (Majors) I
Spring 2010
Phoenix College
SYLLABUS

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Biology Department

Visit my Web Page at:

<http://www.pc.maricopa.edu/Biology/amarti-subirana/BIO%20181/Pages/My%20Front%20Page>

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Office hours: **MWTR:** 2:30 - 3:30PM **F:** 10 - 11AM or by appointment

Lecture Section: **31035:** TR 8:30 - 9:45AM, room C-205

Required Textbook and Lab Manual:

Biology, Campbell & Reece, 8th ed., 2008, Benjamin & Cummings.

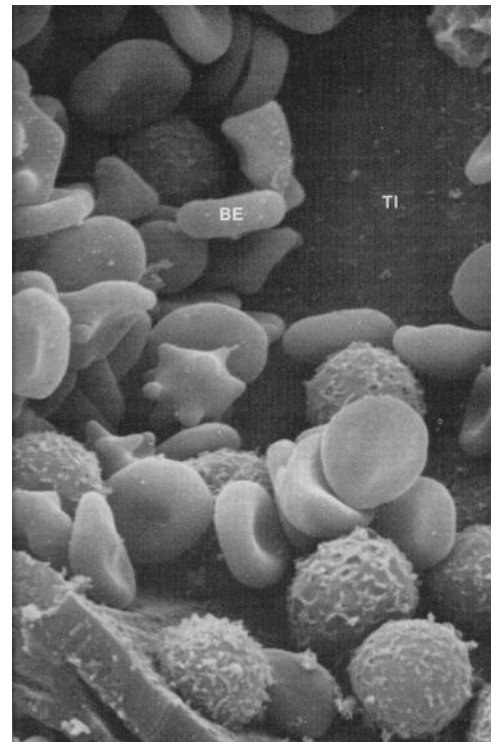
(Students who **DO NOT** have to take BIO 182 might purchase *Volume I Biology, A Custom Edition for Phoenix College*. The volume contains all of the chapters necessary for the BIO 181 class)

Biology 181 Laboratory Manual, furnished by the Biology Department

(Textbooks are available at the PC bookstore)

COURSE DESCRIPTION AND REQUIREMENTS

Students will learn principles of structure and function of living things at molecular, cellular, and organismic levels of organization. The Arizona Board of Regents has established as a general guideline that each course should require a student to spend a minimum of two hours in preparation outside the class for every hour spent in class. This time should be devoted to reading, taking chapter notes, writing papers, and studying for tests and quizzes.



COURSE COMPETENCIES

1. Describe and apply the scientific method to solve problems in biological context
2. Describe the characteristics of life
3. Identify the basic parts of atoms and describe how they influence chemical characteristics
4. Analyze the relationships between the structure and functions of the four kinds of organic molecules found in living things
5. Identify the parts of a cell and describe their structure and functions
6. Compare and contrast prokaryotic and eukaryotic cells
7. Describe cellular transport, membrane structure, and membrane functions
8. Describe the laws of thermodynamics, energy processes, and enzymes as they relate to biology
9. Explain the purpose and components of cellular respiration
10. Explain the purpose and components of photosynthesis
11. Describe the biological processes of mitosis, meiosis, DNA duplication, and protein synthesis
12. Compare Mendelian and non-Mendelian genetics and use problem solving to predict the outcome of genetic crosses
13. Describe gene regulation and effectively analyze the various biotechnological applications
14. Describe the genetic basis of development
15. Demonstrate knowledge of laboratory safety skills and procedures
16. Practice principles of scientific method while conducting laboratory activities and experiments
17. Perform laboratory activities using relevant laboratory equipment, chemical reagents, and supplies to observe biological specimens, to measure variables, and to design and conduct experiments
18. Operate light microscopes, prepare wet-mount slides, and use stains
19. Exhibit ability to use pipettes and other volumetric measuring devices, chemical glassware, balances, pH meters or test papers, spectrophotometers, and separation techniques, such as chromatography and electrophoresis to perform activities relevant to other course competencies
20. Develop graphing skills manually and/or by using appropriate computer software
21. Calculate and make molar and/or percent solutions of varying concentrations
22. Analyze and report data generated during laboratory activities and experiments

CLASS FORMAT

The lecture and laboratory are designed to complement each other. Materials and topics are presented in a factual and theoretical format accompanied by an experimental format to demonstrate, verify, and solidify these concepts as well as to stimulate interest and develop the skills necessary for further inquiry.

There will be limited access to the lab outside of the scheduled time allotted and therefore, students should always be prepared and use their time methodically and efficiently. It is required

that all lab exercises be thoroughly read before coming to the lab and that as many questions as possible be at least partially answered. There are limited supplies for the course and thus, they should be used by the student while in the student's possession and made available to others when not in use.

Students are always encouraged and will sometimes be required to form groups both in and outside of the class for the purpose of discussing, and/or reviewing, and forming conclusions concerning the materials covered in the class and laboratory. In addition, it is recommended that students form associations in the lab in order to complete the assignments and experiments in an efficient, thorough, and timely fashion.

ATTENDANCE & TARDINESS

Attendance is mandatory. Attendance will be taken and recorded at every scheduled meeting. Anything beyond an unexcused absence will have an impact on your grade. According to school policy, students are allowed three unexcused lecture absences and one unexcused lab absence. Please be aware that **additional absences will result in withdrawal by the instructor.**

Absent or late students will lose in-class assignments or lab quizzes. **Please make every effort to be in class on time.** Habitual tardiness will have the same effect than unexcused absences. The first time you are late to class, I'll give you a warning. After three late arrivals, I will withdraw you.

If an emergency arises and you must be absent, contact me as soon as possible.

Turning Point clickers will be used in class and in lab. Clickers must be returned to their case after every class or lab meeting. Failure to do so will result in a **10 point deduction** until clickers are returned.

ASSIGNMENTS, EVALUATION & GRADING

There are 950 total points available for the course (400 for lecture and 510 for lab):

Assignment	Number	Points @	Point Totals
Lecture Assignments	8	15	120
Lecture Mini-Exams	8	30	240
Genetics Problem Set	1	40	40
Lab Quizzes and Activities	13	30	390
Lab Papers	2	75	150
COURSE TOTAL			940

Grading and Assignment Information:

- a) **Eight Lecture Assignments** will be assigned worth a total of 120 points. Each assignment will consist of 15 quiz relevant questions from the textbook, and will be worth 15 points. The assignment will be completed as homework, and turned prior to the lecture mini-exams (see Course Itinerary for due dates).
- b) **Eight Lecture Mini-exams** will be given worth a total of 240 points. Each of the mini-exams will cover a set of assigned readings and material discussed in class. Each one will consist of 15 questions worth 2 points each (see Course Itinerary for mini-exam dates).
- c) **One Genetics Problem Set** will be assigned worth a total of 40 points. The set will consist of 10 problems worth 4 points each.
- d) **Lab Quizzes and Lab Activities** vary in format and they are adapted to the particulars of each lab. They consist of quizzes, or completing lab exercises during the laboratory or as a homework. Completed exercises will be collected at the end of the lab or on a specific due date. Thirteen lab exercises/quizzes will be assigned worth a total of 390 points. Each exercise is worth 30 points (see Lab Itinerary for due dates).
- e) **Two Lab Papers** will be assigned worth a total of 150 points. Lab papers will be written following the scientific format. Each lab papers is worth 75 points (see Lab itinerary for due dates).
- f) **One Optional Cumulative Final** will be given worth a total of 240 points. The final exam will cover the mini-exam material from the entire semester. The final is optional. Students will be allowed to take the final ONLY if they have taken at least 6 of the eight mini-exams. The final exam score will replace the cumulative score on the eight mini-exams if it is higher. It will be ignored if it is not. The final exam will consist of 75-100 multiple choice questions.

Late and Missed Assignments:

I will not accept late assignments. Assignments will be collected on the due date at the beginning of the class period. Lab work is considered an assignment.

There are no make-ups for missed mini-exams. NO EXCEPTIONS. A cumulative comprehensive final will be offered during finals week. The optional cumulative final can be used to replace your score on all eight mini exams if it is higher.

There are no make-ups for missed lecture assignments of any kind. Not turning assignments on time will result in a score of 0.

There are no make-ups for missed labs or lab quizzes: Multiple-choice lab quizzes will be

given promptly at the beginning of the lab period. Lab quizzes will be based on the lab material covered in the preceding lab period and will include a question pertaining to that day lab.

Final Grades:

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

WITHDRAWALS

It is the student's responsibility to withdraw from a class. The instructor's signature is required to withdraw. Failure to officially withdraw will result in a failing grade.

ACADEMIC MISCONDUCT

Students are expected to behave in an appropriate manner while attending this class. I expect students to be working only on this course during class time. Please avoid class interruptions such as beepers, pagers, and cell phones. Academic Misconduct includes misconduct associated with the classroom and laboratory learning process. Some examples of academic misconduct are cheating, plagiarism, excessive talking, excessive late arrivals, excessive early departures, excessive absences as well as any behavior that disrupts the class. **Cell phones, beepers, and audio devices must be turned off while in class. Text-messaging, music playing or music listening while in class or in lab would be considered disruptive behavior and, as such, will be dealt in accordance with college policies.**

Please see *2009-2010 Phoenix College Catalog* for further information about PC Policies and Regulations.

RESPECT FOR DIVERSITY

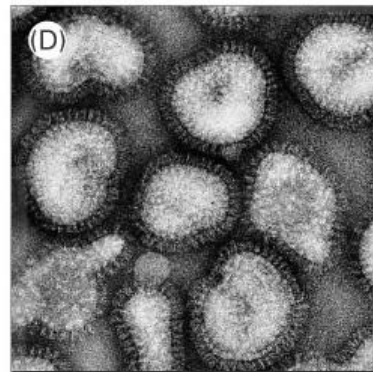
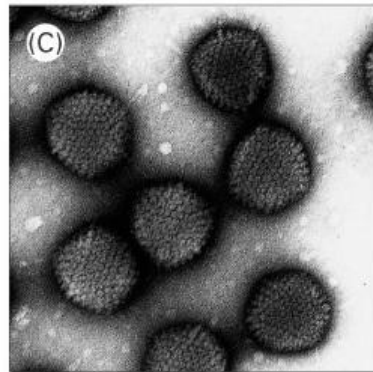
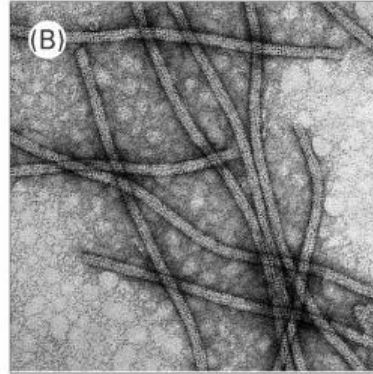
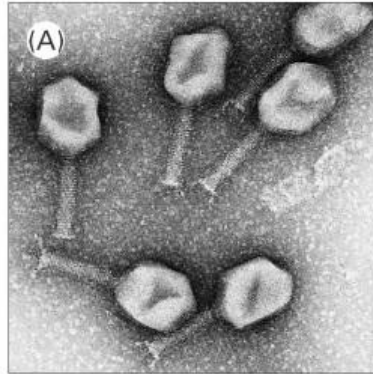
Diversity encompasses: age, life experiences, profession, ethnicity, region, nation, lifestyle, social class, learning style, philosophy of life, sexual orientation, religion, personality, mental and physical challenges, customs, values, gender. In this class, anyone with a different perspective or a different angle on reality will be respected. I am committed to fostering a respect for each other's right to think, feel, or act in their own manner.

DISABILITY RESOURCES AND SERVICES

The Disability Support Services (DSS) Office coordinates services which will ensure equal access to college programs for students with disabilities. Services include interpreting for the deaf/hard of hearing, notetaking, reading, scribing, adaptive technology, testing accommodations, alternative text formatting, and special seating arrangements. Some classroom accommodations such as interpreting services, audio taped texts and handouts, enlarged print and brailled materials require preparation time. For this reason, students with disabilities are encouraged to contact the DSS Office prior to registration and provide us with the necessary documentation. All disability-related information provided to DSS remains confidential.

Students who are aware of any physical or non-physical disability that may affect their

performance in class are kindly encouraged to inform me during the first week of class, or to contact the Office of Disability Support Services (DSS) in the Learning Center Building (phone # (602) 285-7477 V/TDD) in order to accommodate their specific needs.



**BIOLOGY 181 General Biology (Majors)
Course Itinerary - Fall 2010**

Week/Dates	Chapters	Topics & Assignments	Labs
Week 1 (Jan 18-22) <i>Jan 18</i>	1, 2, 3	Characteristics of Life Atoms and Chemical Bonds. Water <i>No Classes (MLK Day)</i>	No Labs
Week 2 (Jan 25-29) <i>Jan 28</i>	4,5	The Atom of Carbon. Macromolecules <i>Atoms and Chemical Bonds: Assignment 1</i>	Lab 1: The Scientific Method
Week 3 (Feb 1-5) <i>Feb 4</i>	8	Energy & Metabolism. Enzymes <i>Atoms and Chemical Bonds: Mini Exam 1</i>	Lab 2: Spectrophotometry. Standard Curves Lab 1 Quiz
Week 4 (Feb 8-12) <i>Feb 11</i>	16	DNA Structure and DNA Replication <i>Carbon and Macromolecules: Assignment 2</i>	Lab 3: Factors Affecting Enzyme Function Lab 2 (Spectrophotometry) Mini Essay due
Week 5 (Feb 15-19) <i>Feb 15</i> <i>Feb 18</i>	17	Protein Synthesis <i>No Classes (Presidents' Day)</i> <i>Carbon and Macromolecules: Mini Exam 2</i>	No Labs
Week 6 (Feb 22-26) <i>Feb 25</i>	17, 18, 19	Protein Synthesis. Prokaryotic and Eukaryotic Genomes. DNA Technology <i>DNA Structure and DNA Replication: Assignment 3</i>	Lab 4: Standard Curves and Guidelines for Writing a Scientific Paper Lab 4 Graphs due
Week 7 (Mar 1-5) <i>Mar 4</i>	6	Cell Structure and Function <i>DNA Structure and DNA Replication: Mini Exam 3</i>	Lab 5: DNA Fingerprinting Lab 5 (DNA Fingerprinting) Worksheet due Paper 1 (Enzymes) Introduction and Results draft due
Week 8 (Mar 8-12) <i>Mar 11</i>	6	Cell Structure and Function (cont) <i>Protein Synthesis: Assignment 4</i>	Lab 6: Bacterial Transformation Lab 6 (Bacterial Transformation) Worksheet due Paper 1 (Enzymes) due

Week 9 (Mar 15-10)		Spring Break No Classes	No Labs
Week 10 (Mar 22-26) <i>Mar 23</i> <i>Mar 25</i>	7, 9	Membrane Structure and Function Cellular Respiration Protein Synthesis: Mini Exam 4 Cell Structure and Function: Assignment 5	Lab 7: Microscopy & Cells Lab 7 (Microscopy & Cells) Drawings due
Week 11 (Mar 29- Apr 2) <i>April 1</i>	9	Cellular Respiration (cont) Cell Structure and Function: Mini Exam 5	Lab 10: Genetic Disorders Library Lab
Week 12 (Apr 5-9) <i>Apr 8</i>	10	Photosynthesis Membrane Structure and Function: Assignment 6	Lab 8: Transport Mechanisms Lab 10 (Library Lab) table due
Week 13 (Apr 12-16) <i>Apr 15</i>	12, 13	Cell Cycle & Cell Division. Binary Fission, Mitosis & Meiosis Membrane Structure and Function: Mini Exam 6	Lab 9: Aerobic Respiration Lab 8 (Transport Mechanisms) Quiz Lab 9 (Aerobic Respiration) Worksheet due
Week 14 (Apr 19-23) <i>Apr 22</i>	12, 13	Cell Cycle & Cell Division. Binary Fission, Mitosis & Meiosis (cont) Cellular Respiration & Photosynthesis: Assignment 7	Lab 11: Photosynthetic Pigments and Photosynthesis Paper 2 (Genetic Disorders) due
Week 15 (Apr 26-30) <i>Apr 29</i>	14	Mendelian Genetics. Patterns of Inheritance Cell Respiration & Photosynthesis: Mini Exam 7	Lab 12: Cell Reproduction Lab 11 (Photosynthesis) Mini Essay due Lab 12 (Cell Reproduction) Worksheet due
Week 16 (May 3-7) <i>May 4</i> <i>May 6</i> <i>May 7</i>	14, 15	Mendelian Genetics. Patterns of Inheritance (cont). Human chromosomes Cell Cycle & Cell Reproduction: Assignment 8 Cell Cycle & Cell Reproduction: Mini Exam 8 Genetics Problem Set due	Lab 13: Mendelian Genetics
Week 17 (May 10-14) <i>May 13</i>		Finals Week Final Exam 8:00-9:30AM (in C-205)	No Labs

Your instructor reserves the right to revise or rearrange this schedule based upon the needs of the class.