Course Syllabus, Spring Semester 2008 C.E.

BIO181: General Biology for Majors I
Section Number 0468
14 January - 09 May 2008 C.E.
Lecture: MW 10:00 - 11:15, Dalby 225
Laboratory: M (Section 0472) or W (Section 0477) 11:30 - 14:20, Dalby 108 (Some students will be in another instructor's laboratory section.)

Course Description:

This course treats principles of structure and function of living things at molecular, cellular, and organismic levels of organization. Field trips may be required at students' expense. Prerequisites: None. One year of high school chemistry or one semester of college-level chemistry is strongly recommended.

Instructor Information:

Ty C.M. Hoffman, Ph.D.
bio181@cox.net (electronic mail)
6022857610 (telephone message)
6022857349 (facsimile)
Dalby 205 (office)
Office Hours: MW 08:30-09:30; TR 11:30-12:30; and by appointment
Free Tutoring: Wednesdays, 14:30-16:30, Math + Science Center, Phoenix College Library

Course Objectives:

1. Describe the scientific method.
2. Describe the characteristics of life.
3. Identify the basic parts of atoms and describe how they influence chemical characteristics.
4. Describe 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. Describe cellular transport, membrane structure and membrane functions.
7. Compare and contrast prokaryotic and eukaryotic cells.
8. Describe the laws of thermodynamics as they relate to biology.
9. Describe the purpose and components of cellular respiration.
10. Describe the purpose and components of photosynthesis.
11. Describe the biological processes of mitosis, meiosis, DNA duplication and protein synthesis.
12. Describe Mendelian genetics and predict the outcome of genetic crosses.
13. Describe gene regulation and genetic applications.
14. Describe the scientific basis of evolution.
15. Describe the general characteristics of each kingdom in biological classification.

Course Website:

The following URL should be used to access my website.

http://www.pc.maricopa.edu/Biology/thoffman

Be sure to check it <u>immediately</u> and often. You should bookmark the section for this semester's class. You will be able to check your scores, as well as your standing compared to the rest of the class, your maximum possible score, and your minimum score required on future assignments to receive a passing grade. The website will include many other useful pages, some of whose addition to the website will not be announced by email. Please check the website regularly.

Supporting Texts (See note about textbooks on my website):

Biology (7th ed.), by Campbell and Reece (ISBN 080537146X)
(6th Edition is ISBN 0805366245.)
Life: The Science of Biology (8th ed.), by Sadava, Heller, Orians, Purves, and Hillis
(ISBN 0716776715, also available in paperback; 7th Edition is ISBN 0716798565.)
BIO181 Laboratory Manual, provided to you in the laboratory

The textbook, though hefty, should be brought to lecture and laboratory periods, as it provides many useful visual illustrations.

Attendance:

Though I will not deduct any points for absence or tardiness, I strenuously recommend that you attend every lecture. You MUST attend every laboratory meeting if you want to avoid loss of points.

My Absolutely Rigid Policy on Missing Lecture Examinations:

It's important for everyone to be aware of the policy regarding make-up lecture examinations. If you fail to complete a scheduled lecture examination by the deadline for that examination, there will be no official penalty for missing the examination. However, it is my strict policy that *multiple-choice* lecture examinations may be taken only when they are scheduled to be taken (i.e., per the most recently updated syllabus). This means that all make-up lecture examinations will consist of short-answer or essay type questions. NO MAKE-UP LECTURE EXAMINATION WILL EVER BE A MULTIPLE-CHOICE TEST. To ensure that you fully understand my policy, please re-read the previous sentence. The material treated on a make-up examination will be the same material treated on the corresponding multiple-choice version. In that sense, one can say that the make-up examinations are therefore no more difficult. But for many students in my experience, scores on short-answer tests are significantly lower than those on multiple-choice tests. This is because doing well on a short-answer test requires that you truly know what you're talking about. Guessing is much less likely to net you a correct answer. I'm telling you this, on the one hand, to make the official policy known. But even more importantly, I'm telling you this to strenuously dissuade you from missing a lecture examination for any but the most unavoidable of reasons. Doing well in this class REQUIRES that you make the class a priority. Therefore, if you'd like to receive a good grade, you would do well to save excuses for the other things that might coincide with the test dates, not vice-versa.

Disability Statement:

The college will make reasonable accommodations for persons with documented disabilities. Students should notify Student Services and their instructors of any special needs.

Schedule of Topics to be Covered:

Week	Date	Lecture Topic	Laboratory Exercise
01	14 Jan.	Introduction / Exploring Life	1: The Scientific Method
	16 Jan.	The Chemical Context of Life	
02	21 Jan.	Observance of MLK Day (No meeting)	Observance of MLK Day (No meeting)
	23 Jan.	Water and the Fitness of the Environment	
03	28 Jan.	Carbon and the Molecular Diversity of Life	2: Spectrophotometry. Determination of Standard Curves
	30 Jan.	The Structure and Function of Macromolecules	
04	04 Feb.	**EXAMINATION 1**	3: Factors Affecting Enzyme Function
	06 Feb.	An Introduction to Metabolism	
05	11 Feb.	An Intro. to Metabolism / A Tour of the Cell	Continuation of labs 2 and 3. Standard Curves and Guidelines for Writing a Scientific Paper
	13 Feb.	A Tour of the Cell	
06	18 Feb.	Observance of Presidents' Day (No meeting)	Observance of Presidents' Day (No meeting)
	20 Feb.	Membrane Structure and Function	
07	25 Feb.	Membrane Structure and Function	4: Microscopy and Cells
	27 Feb.	**EXAMINATION 2**	
08	03 Mar.	Cellular Respiration	5: Transport Processes; **Paper #1 due (Enzymes)**
	05 Mar.	Cellular Respiration	
09	10 Mar.	Vernal Hiatus (No meeting)	Vernal Hiatus (No meeting)
	12 Mar.	Vernal Hiatus (No meeting)	
10	17 Mar.	Photosynthesis	6: Aerobic Respiration
	19 Mar.	Photosynthesis	
11	24 Mar.	The Molecular Basis of Inheritance	7: Photosynthetic Pigments and Photosynthesis
	26 Mar.	From Gene to Protein	
12	31 Mar.	From Gene to Protein	11: Bacterial Transformation
	02 Apr.	From Gene to Protein	
13	07 Apr.	**EXAMINATION 3**	8: Cell Reproduction
	09 Apr.	The Cell Cycle and Cell Division	
14	14 Apr.	The Cell Cycle and Cell Division	9: Karyotyping; **Paper #2 due (Photosynthesis)**
	16 Apr.	Meiosis and Sexual Life Cycles	
15	21 Apr.	Meiosis and Sexual Life Cycles	10: Mendelian Genetics in Corn
	23 Apr.	Mendel and the Gene Idea	
16	28 Apr.	Mendel and the Gene Idea	12: DNA Fingerprinting
	30 Apr.	The Chromosomal Basis of Inheritance	
17	05 May.	**EXAMINATION 4 (11:00!)**	Finals Week (No meeting)
	07 May.		

Disclaimer:

Course content and point allocation may vary from this outline to meet the needs of this particular group.

Point Distribution:

There will be four lecture examinations, each of which will be worth 125 points. The fourth of these will treat only the material from the final fourth of the semester, i.e., it will not be a comprehensive final examination. Each of the thirteen laboratory meetings will be worth 30 points, which will be a mixture of points for attendance and points for written assignments, including quizzes. The lowest of these thirteen laboratory scores will be discarded. You should expect a quiz to be given PROMPTLY at the beginning of each laboratory meeting (11:30), starting with the second meeting. Quizzes must be submitted by 11:40 each meeting. Otherwise, no points will be earned. Tardiness will cause you to lose quiz points. If your schedule will not allow you to get to the laboratory on time, then you have chosen the wrong laboratory section, and you should immediately withdraw and reschedule. Two papers will be assigned, each worth 50 points. Finally, a genetics problem set worth 40 points will be assigned. The total for the course, therefore, will be 1000 points.

Grades:

The minimum final scores for the respective letter grades are given below.

86%	A
76%	B
66%	C
56%	D