Biology 3 - Introductory Biology

Los Angeles Mission College – Fall 2009

Lecture: T/Th 7:30-8:55 AM (INST2001); Lab: T or Th 9:05-12:15 PM (INST2019)

Instructor: Dr. Par Mohammadian

Office Hours: T and Th: 12:15 – 1:15 PM (in INST 2019)

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Hours : Lecture - 3 Carnegie hrs/wk, Laboratory - 3 Carnegie hrs/wk; 4 semester units
Advisory: English 28 (College-level reading, writing, and study skills)
Articulation: CSUN Biology 101; CSULA Biology 155 & 156; UCLA Life Science 15; UCR Biology 2

Biology 3 is a comprehensive course designed to allow students to identify and describe the major concepts of modern and classical biological sciences including: the fundamental physical and chemical principles underlying the life sciences; the basics of cell structure and function; the underlying principles of heredity, reproduction, and development; and the intimate interplay between organisms and their environment. The relationship between STRUCTURE and FUNCTION, from atoms to ecosystems, provides a unifying theme for the course. Concepts will be reinforced by active participation in laboratory exercises, lectures, discussions, readings, and written assignments, constructed specifically to allow students to learn about the scientific process and its effect on our daily lives.

Course Objectives

(1) To learn the language and fundamental concepts of modern biological sciences.
(2) To grow as a student of science, by integrating lectures, discussions, laboratories, home-study, and small-group study into a holistic approach to learning.
(3) To work as a member of a laboratory team, taking responsibility for one's own success, but learning to adapt, share, and learn with others during laboratory meetings.
(4) To become a critically thinking member of our democratic society, being able to read and discuss issues raised by modern advances in the life sciences, in order to make informed decisions for oneself, family, friends, and community.

Student learning outcomes

Students will employ the scientific method by using laboratory techniques in biological sciences to solve problems.

Books required: Biology: Concepts and Connections, Campbell, Mitchell, Reece; 6th edition 2008 Pearson-Benjamin Cummings ISBN 10: 0321622642 (unbound version), 0321489845 (bound version)
Symbiosis: LA Mission College Biology 3 Lab Manual; 2007 Pearson Custom Publishing
(ISBN 10: 0-5361-9565-X) plus supplemental laboratory exercises and worksheets available at http://drpar.pbwiki.com/

- Last day to add: Sept. 13, 2009
- Last day to DROP without a "W": Sept. 27, 2009
- Last day to DROP with a "W": Nov. 22, 2009

Evaluation and Grading

(1) **Quizzes** (3 x 60 = 180 points)
A short quiz will be administered on 4 different occasions during the semester. The quizzes are administered in the beginning of the class and if a student is tardy, she/he will not be allowed to take the quiz. Each quiz will take approximately twenty minutes and will emphasize material covered during previous labs and lectures. The quizzes are intended to stress the importance of staying up with the material. At the end of the semester, the lowest quiz score will be dropped. **Quizzes cannot be made up.** Students should arrange all personal, family, and vacation plans accordingly. Pop-up essay quizzes may also be given throughout the semester.

(2) **Laboratory Exercise Sheets and Lab Participation** (14 x 10 = 140 points)
Students are required to complete all questions, including tables, charts, and graphs, for all laboratory exercises. *Laboratory Review Sheets* must be returned on the same day. Late reports are not accepted. The Exercise Sheets for each of the 14 laboratory meetings will be worth 10 points each. **Do not underestimate the value of these points!** Every semester some students lose a whole grade because of absences, tardiness, failure to participate, or failure to hand-in Laboratory Review Sheets complete and on time. A student, who misses three laboratory sessions or is tardy three times, excused or unexcused, is subject to receiving a Failing Grade or may be dropped. The fieldtrip to the zoo is part of your lab assignment. The details on the fieldtrip will be given to you by your instructor close to the date.

(3) **Midterm Examinations** (3 x 130 = 390 points)
There will be 3 objective midterm exams shown as scheduled in the course outline. The exams are administered in the beginning of the class and if a student is tardy, she/he will not be allowed to take the exam. **No make-up midterm examinations will be given.** A student who has an excused absence from one midterm only will have the percentage earned on the next examination counted for that missed score. The excuse for the absence must be reported to the instructor within 24 hours and accompanied with proper documentations. Students should arrange all personal, family, and vacation plans accordingly. These occasions are not considered as excused absences.

(4) **Case Study poster** (1 x 40)
Written communication and critical thinking are essential components of science. Students will be asked to read and respond to a controversial issue raised by advances in modern biological sciences chosen by the student. Students will be required to write a coherent, 2 page, single spaced, Times Roman 12, and type-written essay in which he/she will argue the merits of their analysis of the issue. Emphasis will not be placed on the position taken, but rather on the research, clarity, and thoroughness of the argument. There are no correct answers - communication and analysis are the focus. The essay will be stapled to a poster that is prepared and creatively designed by the student. The essay should include a title page (title, author's name, class, etc.), introduction, body, conclusion, and references (at least 3 references from scientific pre-reviewed journals). You are encouraged to include text, pictures, and images related to your topic on your poster. You are required to know your topic and you may also be asked to present your poster. Your poster must be at least 30 by 40 inches.
This project will be evaluated as follows: Organization (grammar, scientific language, inclusion of all parts, neatness): 8 points; Introduction to the topic and proper related research: 14 points; body and relevant discussion of the literature and your input: 13 points; Conclusions: Short summary of the essay: 5 points; and extra 5 points for creativity!

(5) **Final Laboratory Practical Examination** (80 points)
The Final Laboratory Practical Examination will cover all material from all laboratory exercises throughout the semester and will include "hands-on" experimentation that will be accomplished by lab the groups. You can use your lab reports. No make-up Exam will be given.

(6) **Final Objective Examination** (170 points)
The Final Objective Examination will include material from throughout the course. No make-up Final Exam will be given. Students should arrange all personal, family, and vacation plans accordingly.

Evaluation	Number	x	Points	=	Total	Percentage
Quizzes	3		60		180	18%
Lab Exercise Sheets	14		10		140	14%
Case Study	1		40		40	4%
Midterm Exams	3		130		390	39%
Final Practical Exam	1		80		80	8%
Final Objective Exam	1		170		170	17%
					1000	**100%**

TENTATIVE GRADING SCALE (final point total may be subject to change)

Point Total	Percentage	Letter Grade
900-1000	100 - 90%	A
800-899	89 - 80%	B
700-799	79 - 70%	C
600-699	69 - 60%	D
599- lower	59 - lower	F

Lecture Notes are Available on http://drpar.pbwiki.com.
The notes may be downloaded and saved as a Powerpoint or HTML file. These files are very large, and may require students to use high-speed Internet connections available also at the library. You will also find links to animations related to the topics that we review in the class.
The website of the publisher is an excellent resource to find chapter reviews and quizzes. You should find the link to the website in your book. http://wps.aw.com/wps/media/access/Pearson_Default/5329/5457129/login.html

Additional Materials
Each student should **purchase ScanTron** Answer Sheets for the Quizzes, Midterms, and Final Exam.

Lecture/*Laboratory* Schedule

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Dr. Par Mohammadian

Date	**Lecture/** ***Laboratory***	**Reading/** ***Lab Exercise***
Week 1		
T 9/01	Course Intro; Introduction - Study of Life	Chapter 1
	Scientific Method	*Lab Topic 1*
Th 9/03	The Chemical Basis of Life	Chapter 2
	Scientific Method	*Lab Topic 1*
Week 2		
T 9/08	The Chemical Basis of Life	Chapter 2
	Tools for Inquiry	*Lab Topic A*
Th 9/10	The Molecules of Cells (Macromolecules)	Chapter 3
	Tools for Inquiry	*Lab Topic A*
Week 3		
T 9/15	Quiz 1 (ch 1-2); The Molecules of Cells	Chapter 3
	Chemistry & pH	*Lab Topic 3*
Th 9/17	A Tour of the Cell	Chapter 4
	Chemistry & pH	*Lab Topic 3*
Week 4		
T 9/22	A Tour of the Cell	Chapter 4
	Use of the Microscope	*Lab Topic 5*
Th 9/24	The Working Cell	Chapter 5
	Use of the Microscope	*Lab Topic 5*
Week 5		
T 9/29	**Examination #1 - Chapters 1-4**	
	Macromolecules	*Lab Topic4*
Th 10/01	The Working Cell	Chapter 5
	Macromolecules	*Lab Topic 4*
Week 6		
T 10/06	How Cells Harvest Chemical Energy	Chapter 6
	Digestion	*Lab Topic 13*
Th 10/08	How Cells Harvest Chemical Energy	Chapter 6
	Digestion	*Lab Topic 13*
Week 7		
T 10/13	Quiz 2 (ch 5-6); Using Light to Make Sugars: Photosynthesis	Chapter 7
	Cellular Respiration	*Lab Topic 7*
Th 10/15	Using Light to Make Sugars: Photosynthesis	Chapter 7
	Cellular Respiration	*Lab Topic 7*
Week 8		
T 10/20	Cellular Basis of Reproduction and Inheritance	Chapter 8
	Photosynthesis	*Lab Topic 8*
Th 10/22	Cellular Basis of Reproduction and Inheritance	Chapter 8
	Photosynthesis	*Lab Topic 8*

Date	Lecture/*Laboratory*	Reading/*Lab Exercise*	
Week 9			
T 10/27	**Examination #2 - Chapters 5-7**		
	Mitosis & Meiosis	*Lab Topic 9*	
Th 10/29	Patterns of Inheritance	Chapter 9	
	Mitosis & Meiosis	*Lab Topic 9*	
Week 10			
T 11/03	Patterns of Inheritance	Chapter 9	
	Genetics	*Lab Topic 10*	**Case Study poster due**
Th 11/05	Molecular Biology of the Gene	Chapter 10	
	Genetics	*Lab Topic 10*	**Case Study poster due**
Week 11			
T 11/10	Quiz 3 (ch 8-9); How Genes are controlled	Chapter 11	
	DNA and Gene Expression	*Lab Topic 11*	
Th 11/12	How Genes are controlled	Chapter 11	
	DNA and Gene Expression	*Lab Topic 12*	
Week 12			
T 11/17	How populations evolve	Chapter 13	
	Natural Selection	*Lab Topic 12*	
Th 11/19	**Examination #3 - Chapters 8-11**		
	Natural Selection	*Lab Topic 12*	

Sat 11/21: Field trip to the LA zoo at 9:20 am

Week 13			
T 11/24	Circulation	Chapter 23	
	Circulation	*Lab Topic 15*	***Report on the zoo fieldtrip due***
Th 11/26	**Thanksgiving Holiday (College Closed)**		
Week 14			
T 12/01	Circulation	Chapter 23	
	Final Lab Practical Examination		
Th 12/03	Animal Structure and Function	Chapter 20	
	Final Lab Practical Examination		
Week 15			
T 12/08	Quiz 4 (ch 13, 23); Reproduction and Development	Chapter 27	
	No lab – Replaced by the field trip		
Th 12/10	Review		
	No lab – Replaced by the field trip		
Week 16			
T 12/15	**FINAL EXAMINATION** (7:30 – 8:55 AM)		