INTRODUCTION TO BIOLOGY

Biology 10/11
Lecture: Tu Th 9:40 - 11:10
Lab Section 1 M 8:30 – 11:30
Lab Section 2 W 8:30 – 11:30
Lab Section 3 F 8:30 – 11:30
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Saint Mary's College
Wendy Lacy, PhD
Office BROH 228
Office hrs Tu Th 9 – 9:40
Tu Th 11:10 – 12:00
Office (925) 631-4683

Student Disability Services: Student Disability Services extends reasonable and appropriate accommodations that take into account the context of the course and its essential elements for individuals with qualifying disabilities. Students with disabilities are encouraged to contact the Student Disability Services Office at (925) 631-4358 to set up a confidential appointment to discuss accommodation, policies, guidelines and available services. Additional information regarding the services available may be found at the following address on the Saint Mary's website: http://www.stmarys-ca.edu/academics/academic-advising-and-achievement/student-disability-services.html

Course Description

This class investigates the chemistry of life, the organization of cells and the molecular processes inside of cells. The course emphasizes the genetic basis of life and includes an introduction to biotechnology.

The course learning objectives:

1. To study the structure, function and organization of cells and cellular organelles. (*Midterm I*)
2. To explore cellular processes such as cellular respiration, reproduction and communication. (*Midterms I and II*)
3. To understand the principles governing the genetics of inheritance. (*Midterm III*)
4. To study the concepts underlying gene regulation, cloning and human genome project. (*Midterm III*)
5. To relate the biological principles to understanding abnormal processes such as cancer. (*Final*)
6. To learn scientific inquiry through hypothesis driven experimentation relating to cellular processes. (*Lab quizzes and lab practicals*)
7. To explore social and ethical issues related to developments in the biological sciences. *(Social/ ethical paper)*

** The information in parenthesis indicates the locations where the assessment for this learning objective will be done.* **LECTURE SCHEDULE**

FALL 2011

		Chapter
8/30	Introduction, class overview, grading	
	The Chemical Basis of Life/Molecules of Cells	
9/1	Elements, Atoms, and Compounds, Chemical Bonds	2
	Water's Life Supporting Properties	
9/6	Organic Compounds- Carbohydrates and Lipids	3
9/8	Organic Compounds- Proteins and Nucleic Acids	
	A Tour of the Cell	
9/13	Intro to the Cell, Nucleus and Ribosomes, the Endomembrane System	4
9/15	Energy Converting Organelles, Cytoskeleton and Cell Surface	
9/20	MIDTERM I	
	The Working Cell	
9/22	Membrane Structure and Function	
9/27	Energy and the Cell, How Enzymes Function	5
	How Cells Harvest Chemical Energy	

9/29	Cellular Respiration and Fermentation	6
10/4	Connections between Metabolic Pathways	
	Cellular Basis of Reproduction and Inheritance	
10/6	Cell Division and Reproduction, Cell Cycle and Mitosis	8
10/11	Meiosis and Crossing Over, Alteration of Chromosome Number and Structure	
10/18	MIDTERM II	
	Patterns of Inheritance	9
10/20	Mendel's Laws/Variations on Mendel's Laws	
10/25	Chromosomal Basis of Inheritance, Sex Chromosomes and Sex Linked Genes	
	Molecular Biology of the Gene	
10/27	Structure of Genetic Material, DNA Replication	10
11/1	Flow of Genetic Information, Mutations	
	How Genes are Controlled	
11/3	Control of Gene Expression	11
11/8	MIDTERM III	
11/10	Animal Cloning	
11/15	Stem Cells	
11/17	Genetic Basis of Cancer	
11/22	Genetic Basis of Cancer	
	DNA Technology and Genomics	
11/29	Gene Cloning	12
12/6	Genetically Modified Organisms, Gene Therapy	
12/8	Human Genome Project, Genomics, Proteomics	
12/15	FINAL 9 am – 11 am	

TEXT: Biology, Concepts and Connections, Seventh Edition, Reece, Taylor, Simon and Dickey 2012
ISBN 0-321-69681-6

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LAB SCHEDULE
FALL 2011

Week of:	Topic	Page
8/29	Tools of Scientific Inquiry	1
9/12	Macromolecules	53
9/19	Diffusion and Osmosis	77
9/26	Cellular Respiration	155
10/3	Mitosis and Meiosis	187
10/17	DNA Extraction and Amplification (PCR)	Handout

10/24	DNA Purification and Electrophoresis	Handout
10/31	pH and Buffers	29
11/7	Enzymes	105
11/14	Microscopes and Cells	131
11/28	DNA Sequencing: Results and Analysis Review for Practical	
12/5	LAB PRACTICAL	

LAB TEXT: Symbiosis Custom Lab Program, Introduction to Biology 2011

COURSE GRADING:

Midterm I	15%
Midterm II	20%
Midterm III	20%
Final	20%
Lab	25%

The midterm exams will be multiple choice and short answer. The Final exam will be multiple choice. Scantron sheets will be provided by the instructor. The laboratory portion of the class will be graded separately and will count for 25% of the final grade in the course.

GRADING SCALE:

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