

SUNY COLLEGE AT OLD WESTBURY
BIOLOGICAL SCIENCES
SUMMER 2018
BS2400 BASIC BIOLOGICAL SCIENCE LECTURE

Instructor: Dr. M. Mascareno

office phone: 516/876-2737

Office: Room NS216

email: mascarenom@oldwestbury.edu

Required Textbook: *Biology* by Raven & Johnson latest Edition

Lecture 9:00-11:30 am: MTWR in Room S 107

Laboratory: T and R 1:00 -4:30 PM in S-102 (Main Lab)

Learning Objectives for BS 2400

Core Concepts

1. Evolution:

- a. Understand the theory of evolution and the mechanisms involved in evolutionary processes and sources of genetic variability.
- b. Understand cell structure and function in an evolutionary context.

2. Structure and Function:

- a. Understand the hierarchical organization of life and the concept of emergent properties.
- b. Understand atomic bonding theory
- c. Understand molecular structure of living systems.
- d. Understand cell theory in an evolutionary context

3. Information Flow, exchange and storage:

- a. Understand signaling mechanisms, ie. hormones, neuropeptides and neurotransmitters, and regulatory processes, e.g. negative and positive feedback, inhibitory versus excitatory signals, leading to homeostasis in biological systems.
- b. Understand information flow in the context of reproduction and inheritance.
- c. Understand genome structure and function.

4. Pathways and transformations of energy and matter:

- a. Understand the principles of thermodynamics as they relate to molecular structure, energy conversion, and enzyme function.
- b. Understand energy transactions and energy flow at the biochemical level.

5. Systems:

- a. Understand dynamic interactions of components at one level of biological organization to the functional properties that emerge at higher organization levels.

Competencies

1. **Applying the process of science:** Students will understand and apply the process of science: through observation of a phenomenon, formulation of a hypothesis, testing by experimentation, data collection and analysis.
2. **Interpreting multiple representations:** Students will be able to analyze information presented in different forms, e.g. tables, figures, flow charts and diagrams.
3. **Ability to use quantitative reasoning:** Students will be able to apply quantitative reasoning through the application of mathematical algorithms and or models to the study of biological processes, e.g. metabolism, estimation of population size, estimation of population growth etc..., and to the analysis of data for the purpose of hypothesis testing.
4. **Ability to tap into the interdisciplinary nature of science:** Students will analyze

concepts using an interdisciplinary approach, e.g. understanding structural features or processes from a molecular point of view using chemistry.

5. **Ability to communicate and collaborate with other disciplines:** Students will be able to communicate biologically relevant information both orally (communicating to their professor and their peers) and in written form (written essay exams, discussion boards and lab reports).
6. **Students will understand the connection between science and society:** e.g. understanding the impact of scientific advances on our ability to tackle societal

Course Policies and Student Evaluations

- 1 There will be four lecture exams including the final. The final exam is comprehensive and obligatory. Quizzes will be given unannounced on the previous chapter.

Grade	
Quizzes	15%
Class Exercises	10
Exams	75%

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DATE	TOPIC	READING ASSIGNED
5.29	The Nature of Molecules	Ch2
5.30	The Nature of Molecules	Ch2
5.31	The Chemical Building Blocks	Ch3
6.4	Exam I	
6.5	Cell Structure	Ch4
6.6	Membranes	Ch5
6.7	Cell communications	Ch9
6.11	Exam II	
6.12	How cells divide	Ch10
6.13	Meiosis	Ch11
6.14	Patterns of Inheritance	Ch12
6.18	Exam III	
6.19	DNA: The Genetic Material	Ch14
6.20	DNA: The Genetic Material	Ch14
6.21	Genes and How they work	Ch15
6.25	Genes and How they work	Ch15
6.26	Control of Gene Expression	Ch16
6.27	Cellular Mechanisms of Development	Ch19
6.28	Final Exam	

SCHOOL OF ARTS AND SCIENCES POLICY ON ACADEMIC INTEGRITY

Plagiarism and cheating are condemned at all institutions of higher learning. These acts detract from the student's intellectual and personal growth by undermining the processes of studying, reading, note-taking and struggling with one's own expression of ideas and information. Moreover, cheating inevitably involves secrecy and exploitation of others. See "Academic Integrity" and related topics in the *Old Westbury Catalog, 2006-2008*, p.46.

Plagiarizing means "presenting somebody else's words or ideas without acknowledging where those words and ideas come from" (Ann Raimés, *Keys for Writers*, 5th ed., p.188). Examples include:

- copying material from the Internet or other sources and presenting it as your own
- using any author's words without quotation marks; using any quotation without credit
- changing any author's words slightly and presenting them as your own
- using ideas from any published sources (even in your own words) without exact credit. **Note:** This includes all material from the Internet or electronic databases.
- using long passages in a paper that have been written or rewritten by a friend or tutor
- turning in any assignment written by someone else

However, using quotations or borrowed ideas while giving exact credit is good academic procedure.

Other types of academic dishonesty include unauthorized collaboration or copying of students' work (cheating); falsifying grades or evaluations; and others. They are treated as equivalent to plagiarism.

When detected and verified, plagiarism and other academic dishonesty will be punished severely. Normally, the first offense will result in a failure on the specific assignment; a second offense or a particularly flagrant first offense will result in failing the course. Know what plagiarism is and how to avoid it; for guidance see Raimés or any other college writing handbook. **Please note: in this matter, ignorance is never an acceptable excuse.**