

COURSE SYLLABUS

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COURSE: BIO 111 GENERAL BIOLOGY I

HOURS: Lecture: <u>3</u> Lab/Shop: <u>3</u> Work Exp/Clinical: <u>0</u> Credits: <u>4</u>

COURSE DESCRIPTION:

This course introduces the principles and concepts of biology. Emphasis is placed on basic biological chemistry, molecular and cellular biology, metabolism and energy transformation, genetics, evolution, and other related topics. Upon completion, students should be able to demonstrate understanding of life at the molecular and cellular levels.

Note: In accordance with the Comprehensive Articulation Agreement, this course has been approved to satisfy the Universal General Education Transfer Component requirement for natural sciences in A.A. and A.S. degree programs. This course has been approved to meet the natural sciences requirement in A.A.S. degree programs.

PREREQUISITE(S): None

COREQUISITE(S): None

TEXTBOOK(S) & OTHER SPECIAL REQUIREMENTS:

Open Educational Resources (OER) are listed in the course Moodle.

STUDENT LEARNING OUTCOMES:

Upon successful completion of this course, the student will be able to:

- 1. Apply the major steps of the scientific method for problem solving.
- 2. Discuss basic chemistry as it relates to biological processes that take place in cells.
- 3. Describe cell energetics and the mechanism, kinetics, and regulation of enzyme function.
- 4. Identify, describe, and recite the function of the major organelles found in cells.
- 5. Explain diffusion, osmosis, and active transport and diagram the structure of cell membranes.
- 6. Discuss cell respiration, including glycolysis, Krebs cycle, proton pump, and electron transport chain, and illustrate the process of photosynthesis.
- 7. Explain mitosis, meiosis, and discuss classic Mendelian inheritance patterns, including monohybrid and dihybrid crosses, sex-linked traits, etc.
- 8. Describe the structure, function, and replication of DNA.
- 9. Explain gene expression in living organisms, and describe the processes of transcription and translation in protein synthesis.
- 10. Discuss the Theory of Evolution and relate how the agents of microevolution lead to changes in gene frequencies.
- 11. Discuss recombinant DNA technology and relate it to the impact of genetically engineered food and pharmaceutical products from the perspectives of both developed nations and developing nations.

***Please refer to the online version of the Richmond Community College Program & Course Catalog and the Student Handbook for current academic and general information.