

CAPITAL COMMUNITY COLLEGE
COURSE OUTLINE
General Biology I

SECTION I

SUBJECT AREA AND COURSE NUMBER: BIO*G121

COURSE TITLE: General Biology I

COURSE CATALOG DESCRIPTION: This course serves as an introduction to college biology and is designed to give the student a background in the basic concepts of biology with emphasis on the structure and function of cells, genetics, biotechnology and evolution.

LECTURE HOURS PER WEEK: 3

CREDIT HOURS: 4

LAB HOURS PER WEEK: 3

PREREQUISITE(S): Eligibility for Eng 101, successful completion of MAT 094 or MAT 095, and successful completion of high school chemistry or CHE 111.

SECTION II

A. SCOPE: This course is an introduction to college biology. The topics that will be covered include cell structure and function, genetics, biotechnology and evolution.

B. REQUIRED WORK: To be determined by instructor.

C. ATTENDANCE AND PARTICIPATION: Regular attendance and class/lab participation are expected. (Specific instructor policies should be listed on the class syllabus.)

D. METHODS OF INSTRUCTION: The methods of instruction are determined by each instructor and may include but are not limited to lecture, lecture/discussion, small group, collaborative learning, experimental/exploration, distance learning, student presentations, and use of technologies such as audio-visual materials (films, CD-roms, transparencies, charts, handouts, newspaper and journal readings) computers, and calculators. Student participation through collaborative learning in the laboratory is an integral part of the course.

E. OBJECTIVES, OUTCOMES, and ASSESSMENT

The following objectives and outcomes represent the department's core requirements for student achievement:

LEARNING OBJECTIVES	LEARNING OUTCOMES	ASSESSMENT METHODS
To demonstrate an understanding of:	Student will:	As measured by:
Scientific Investigation	Identify questions that can be answered through scientific investigation and describe the components of a scientific experiment in both the lecture and lab. Summarize results of lab work in tables and graphs. Interpret and discuss results of laboratory work.	Exams Presentations Reports Homework Assignments Lab Reports Lab Practicums
The Chemistry of Life	Examine and describe: <ul style="list-style-type: none"> • atoms, molecules and bonds present in organisms including carbohydrates, lipids, proteins and nucleic acids • the structure of water, its characteristics and its significance to life 	Exams Presentations Reports Homework Assignments Lab Reports Lab Practicums
The Structure and Function of the Cell.	Examine and identify: <ul style="list-style-type: none"> • the structure of eukaryotic cells with procaryotic cells • the structure, location and function of eukaryotic organelles • the structure of the cell membrane and describe its various functions including membrane transport: diffusion, osmosis, passive and active transport, exocytosis and endocytosis • the structure and function of membrane receptors in cell interactions, cell signaling and signal transduction • energy flow through the cell including the formation of ATP • the structure of enzymes and their role in metabolism • the pathways of glycolysis, Kreb's cycle and Oxidative Phosphorylation • the pathways of light-dependent and light-independent reactions of photosynthesis • the cell cycle and mitosis. 	Exams Presentations Reports Homework Assignments Lab Reports Lab Practicums
Genetics	Examine and describe: <ul style="list-style-type: none"> • asexual and sexual reproduction, meiosis and life cycles in plants and 	Exams Presentations Reports

	<p>animals</p> <ul style="list-style-type: none"> • laws of genetics • the relationships between these laws and the structure and function of DNA • the chromosomal basis for inheritance. • transcription, post-transcriptional modification, translation and the control of gene expression • the function and structure of viruses • the applications of recombinant DNA and genetic engineering • genomes and their evolution 	<p>Homework Assignments Lab Reports Lab Practicums</p>
<p>Mechanisms of Evolution</p>	<p>Examine and summarize:</p> <ul style="list-style-type: none"> • natural selection as a mechanism of change over time • the use of fossils and other evidence in tracking the change of organisms over time • the relationships between adaptation and survival • Darwin's role in the formation of the theory of evolution • the role of genes in evolution and speciation • the Hardy-Weinberg Principle • the key events in life's history including the origins of single-celled and multicellular organisms and the colonization of land. 	<p>Exams Presentations Reports Homework Assignments Lab Reports Lab Practicums</p>

F. TEXT(S) AND MATERIALS: To be determined by Science & Math department

G. INFORMATION TECHNOLOGY: To be determined by instructor