



INTRODUCTORY BIOLOGY

Date 12/12/11

C - L - CR
3 - 3 - 4

COURSE NUMBER: BIO 100

PREREQUISITE(S): Completion of RDG 100

CO-REQUISITE(S): MAT 101 or MAT 152

COURSE DESCRIPTIONS This is a course in general biology designed to introduce principles of biology. A minimum grade of "C" is required in order to receive credit in this course (non-Degree Credit)

TEXTBOOK(S): Krogh, David. *Biology: A Guide to the Natural World*. 5th ed., Upper Saddle River: Prentice Hall, 2005.

REFERENCE(S): N/A

OTHER REQUIRED MATERIALS, TOOLS, AND EQUIPMENT: Safety glasses (OSHA approved), calculator, vocabulary folder and lab coat (optional).

METHOD OF INSTRUCTION: Lecture and discussion, questioning, introductory laboratory assignments, collaborative and individual assignments, and article summaries are used in this course. Audio-visuals, biology software, and other resources are used, as the instructor deems appropriate.

GRADING SYSTEM:

93	-	100	=	A
85	-	92	=	B
77	-	84	=	C
70	-	76	=	D
Below	-	70	=	F

GRADE CALCULATION METHOD:

Final Exam	=	30%
Exams	=	30%
Lab	=	15%
Quiz	=	10%
Article Assignment		10%
Vocabulary		5%
	=	<u>100%</u>

**ATTENDANCE
POLICY:**

See Student Handbook pages 77-80
The withdrawal date for Spring Semester will be April 2,2012.

**ACADEMIC
CONDUCT:**

ACADEMIC DISHONESTY:
Please see student handbook page 98.

CELLULAR PHONES AND PAGERS/BEEPERS:
Please see student handbook pages 76-77.

**CLASS/LAB
PROCEDURES:**

Biology 100 is designed to allow students an opportunity to learn the basic principles of biology. This course was developed to meet the need of students who desire to enter the Health Sciences, AA, and/or AS programs, but who lack the prerequisite high school biology. This one-semester course seeks to help students discover general biology principles. Students must read all text assignments and take an active part in both classroom lecture and laboratory discussions and activities. Two article assignments, described separately, are required. There are no make-ups on quiz assignments or exams.

ACCOMMODATIONS:

Students who need special accommodations in this class because of a documented disability should notify Student Disability Services by calling (864) 592-4818, toll-free 1-800-922-3679; via email through the SCC web site at www.sccsc.edu/resources/disabilities; or by visiting the office located in the East Building Room 30-B on the SCC Central campus. Contacting Student Disability Services early in the semester gives the College an opportunity to provide necessary support services and appropriate accommodations..

**COURSE
COMPETENCIES &
OBJECTIVES:**

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

- I. Understand science as a way of learning.
 - A. Understand why it is important to acquire a basic knowledge of biology.
 - B. Understand how science is actually done; theories, hypothesis, and how to apply the scientific method.
 - C. Define life and the hierarchy of living things.

- II. Comprehend the essential part of atoms, molecules, and cells.
 - A. Understand matter and why different substances are fundamentally different.
 - B. Describe the three subatomic particles.
 - C. Describe the three types of chemical bonds.
 - D. Explain the difference between non-polar and polar molecules.
 - E. Predict how a molecule will interact with water.
 - F. Define an acid and a base and understand how pH is important for cells.
 - G. List the four major classes of molecules found in cells, and the major functions of each.
 - H. Recognize the corresponding monomer for each polymer in these four classes of molecules.
 - I. Use of the metric system to relate the different sizes of biological organisms.
 - J. Understand the different types of cells, prokaryote versus eukaryote.
 - K. Differentiate between animal cells and plant cells.
 - L. Understand cell locomotion and cell communication
 - M. Understand the basic structure and composition of plasma membranes.
 - N. Describe the functions of each component of the plasma membrane.
 - O. Explain the ways in which substances move in and out of the cell.

- III. Understand energy and its transformations.
 - A. Understand the two laws of thermodynamics.
 - B. Understand why living organisms need so much energy.
 - C. Differentiate between exergonic and endergonic reactions.

- D. Understand how ATP is used as an energy transfer molecule.
 - E. Describe the functions of enzymes and why enzymes are so crucial to living organisms.
 - F. Understand the concept of coupling reactions.
 - G. Understand where glycolysis occurs, what compounds are generated, and what organisms use this as a sole source of energy.
 - H. Understand why fermentation is performed in certain cells, where and when it occurs, what compounds are required, and what compounds are generated.
 - I. Follow the series of mitochondrial reactions from acetyl-CoA formation, the Krebs cycle, and the electron transport chain.
 - J. Understand where photosynthesis occurs, what organisms can perform photosynthesis, and why photosynthesis is so important for life on Earth.
 - K. Understand the reactions of photosynthesis.
- IV. Understand how genetics works and cell division.
- A. Understand the eukaryotic cell cycle and mitosis.
 - B. Understand the significance of meiosis and differentiate between meiosis and mitosis.
 - C. List the differences between sperm and egg formation in humans.
 - D. Understand the relationship between phenotype and genotype, dominant and recessive alleles of a gene, and homozygote and heterozygote genotypes.
 - E. Diagram a monohybrid and dihybrid genetic cross.
- V. Understand animal anatomy and physiology.
- A. Describe the general characteristics of humans.
 - B. Describe the levels of organization of the animal body.
 - C. Describe the four basic tissue types.
 - D. Explain the organ systems of the human body: integumentary, skeletal, muscle, nervous, endocrine, lymphatic, cardiovascular, respiratory, digestive, and urinary.

IF TIME PERMITS:

- VI. Understand the living world as a whole.
- A. Define ecology.
 - B. Relate the difference in human societies to the

- difference in populations.
- C. Understand the ecosystem is the fundamental unit of ecology.
 - D. Describe the Earth's physical environment
 - E. Identify the Earth's biomes
 - F. Understand the aquatic ecosystems.