SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: BIOL 090 Department: Biological Sciences

Course Title: Basic Biological Science Semester: Spring Year: 1997

Objectives/Competencies

Course Objective	Competencies
1. Identify the characteristics of living things, primarily the cellular basis of life.	1. Describe the basic characteristics of living things. 2. Describe the structure and function of various cells and their parts. 3. Compare plant and animal cells. 4. Define osmosis. 5. Explain how a typical cell grows and reproduces. 6. Demonstrate ability to use a microscope for identifying cells.
2. Develop understanding of: a. Laboratory safety b. Laboratory emergency procedures c. Care and use of laboratory equipment	1. Demonstrate ability to recognize potential dangers prior to performing laboratory procedures. 2. Show ability to operate laboratory emergency equipment. 3. Identify evacuation routes. 4. Demonstrate ability to identify and properly use glassware, pipettes, thermometers and balances.

Course Objective	Competencies
3. Develop understanding of the properties shared by all living things and the cellular nature of life.	1. Summarize properties of all living things. 2. Distinguish between living and non-living items based upon recognition of these properties. 3. Perform tests to determine which living properties apply to a given object. 4. Discriminate between properties readily observable versus those which require complex testing.
4. Develop understanding of the chemistry upon which living things are based.	1. List and summarize the macromolecules used as building blocks for living things. 2. Demonstrate ability to classify compounds based upon which macromolecules they contain. 3. Display proficiency at testing compounds for the presence of each of the macromolecules.
5. Understand the biochemistry upon which life is based including the processes of photosynthesis and metabolism.	1. Summarize and contrast the relationship amongst the components involved in the energy cycle. 2. Demonstrate ability to test cells or organisms using biochemical assays for respiration and photosynthesis.
6. Comprehend the relationship between organisms that make up the animal kingdom.	1. Explain the use of classification systems, and list the seven major classification groups. 2. Identify parts of a moneran and explain how it obtains energy. 3. Describe three kinds of protists. 4. Describe the characteristics of several types of fungi. 5. Compare vertebrates and invertebrates. 6. Describe the characteristics of the major groups of

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	invertebrates and give an example of an animal from each group. 7. Compare coldblooded and warmblooded vertebrates. 8. Describe the characteristics of fishes and amphibians. 9. Demonstrate ability to classify organisms by Class. 10. Show proficiency at dissecting organisms to reveal and identify internal structures. 11. Correlate internal structures visualized in models with those seen in actual organisms. 12. Demonstrate ability to correlate the relationship between internal structure and function.
7. Understand the anatomy, physiology and development of humans.	1. Classify the four types of tissues. 2. Describe the features and functions of the skeletal, muscular, digestive, circulatory, respiratory, excretory, nervous and endocrine systems. 3. Describe human reproduction and development. 4. Identify the functions of the immune system. 5. Summarize the functionality of each of the five senses and the structures involved in perception of these senses. 6. Understand the limitations on sensitivity of these senses. 7. Demonstrate ability to test sensitivity of each sense based upon different types of stimuli.
8. Understand the science of genetics from its beginnings in Mendel's experiments to current research in and applications of molecular genetics.	1. Explain the genetic principles of dominance, segregation, and independent assortment. 2. Solve genetics problems using a Punnett square. 3. Explain how changes in chromosomes affect heredity.

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	4. Describe how certain human traits are transmitted from one generation to the next. 5. Demonstrate comprehension of relationship between the processes of cell division (Mitosis and Meiosis) and inheritance. 6. Demonstrate ability to perform simulated meiosis and distinguish between inheritance of genotypes versus phenotypes.
9. Develop understanding of the role of DNA in inheritance and the application of DNA fingerprinting to criminal forensics.	1. Demonstrate ability to perform DNA purification, Restriction Digestion and Gel Electrophoretic analysis of DNA in a simulated DNA fingerprinting exercise. 2. Exhibit understanding of the applications and limitations of genetic testing for forensics purposes.
10. Apply student skills in the areas of studying; note taking, test taking, memory techniques, listening and comprehending lectures, while preparing them for certain life skills that will enable them to organize their time and cope with stress effectively.	1. Organize time by using specific time management strategies. 2. Summarize the methods of effective note taking. 3. Analyze the Myers-Briggs Learning Style Inventory to formulate a study plan. 4. Describe the different memorization strategies. 5. Demonstrate stress reduction techniques.