

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: BIO 106 **Credits:** 4

Course Title: Life Sciences

Course Description:

Surveys the basic concepts of life science. Engages in the scientific process by developing hypotheses, gathering data, and analyzing results. Explores topics within the context of the societal implications of science. Intended for students not majoring in science. Assignments require college-level reading fluency, coherent written communication, and basic mathematical skills. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week. 4 credits

General Course Purpose:

This course is designed to increase scientific literacy and provide a basic introduction to scientific principles for the non-science major. The major units of the course include the scientific process, characteristics of living organisms, molecular aspects of cells, bioenergetics, cellular and organismal reproduction genetics, evolution, and ecology. Each unit includes activities to help students investigate the implications of science in society. Additionally, students learn how to research and interpret scientific evidence by preparing discussion posts and a research project.

Course Prerequisites/Corequisites:

None

Course Objectives:

Upon completing the course, the student will be able to:

Scientific Literacy

- Develop and test scientific hypotheses.
- Collect and analyze empirical scientific data.
- Explain the implications of scientific concepts in society.
- Communicate scientific ideas, research, and experimental findings in writing.

Characteristics of Living Organisms: Cellular biochemistry, cell structure and function, and bioenergetics

- List the characteristics of living organisms
- Explain the importance of cells and cell theory
- Describe the structure and function of cells
- Identify the role of bioenergetics and cellular metabolism in living organisms

Cellular and Organismal Reproduction: Cell division, genetics and inheritance, biotechnology

- Explain the steps involved in cell division
- Compare and contrast the processes of mitosis and meiosis
- Describe patterns of genetic inheritance
- Research current reproduction and genetics topics in science

Evolution and Ecology: Patterns and evidence of evolution, population and ecosystem ecology

- Explain the process of evolution by natural selection
- Describe the evidence supporting the theory of evolution
- Identify the basic principles of ecology
- Relate the basic principles of ecology to the diversity and distribution of organisms on earth

Major Topics to be Included:

- **Characteristics of Living Organisms:** Cellular biochemistry, cell structure and function, and bioenergetics
- **Cellular and Organismal Reproduction:** Cell division, genetics and inheritance, biotechnology
- **Evolution and Ecology:** Patterns and evidence of evolution, population and ecosystem ecology

Effective date/Updated: January 1, 2023