



## **SYLLABUS**

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### **CATALOG DESCRIPTION**

An understanding of how biological issues affect society is crucial for citizens of today's society. This non-majors course is an introduction to such issues as cloning; genetics, genetic screening and genetically modified organisms; global warming and the carbon cycle; population growth, environmental hazards, ecology, evolution and biodiversity, especially local flora.

Prerequisites:       None

Semester Offered:   On Demand

#### **Common Student Learning Outcomes**

*Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...*

##### **BROAD AND SPECIALIZED LEARNING**

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

##### **CRITICAL THINKING**

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

##### **CULTURAL AND CIVIC ENGAGEMENT**

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

##### **EFFECTIVE COMMUNICATION**

Students will exchange ideas and information with clarity in multiple contexts.

##### **INFORMATION LITERACY**

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

##### **INTEGRATING TECHNOLOGIES**

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

*Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.*

### **Course Learning Outcomes**

**LEARNING OBJECTIVE 1:** Expertise in field of study: Students will demonstrate a thorough, up-to-date knowledge of the central concepts, theories, facts and issues of their academic discipline. This will include an understanding of the role of mathematics and science within the larger social context.

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

1. describe properties associated with living organisms;
2. describe how science differs from other intellectual disciplines;
3. describe the nature of scientific evidence;
4. explain the structure and replication of DNA;
5. describe gene expression;

6. explain the nature of genetic inheritance;
7. explain genetic engineering, stem cells, cloning and current topics in biotechnology;
8. describe the composition of the atmosphere;
9. identify and list the sources of greenhouse gases;
10. explain the carbon, nitrogen and water cycles;
11. describe how greenhouse gases influence global temperatures;
12. describe current human population growth trends;
13. define what is meant by biodiversity and give examples of global trends in biodiversity;
14. explain the current understanding of phylogenetic relationships between organisms (Tree of Life) and give examples of each major group of organisms;
15. name examples of the local plant and animal biota;
16. explain the basic tenets of and evidence for evolution;
17. explain natural and artificial selection and give examples.

LEARNING OBJECTIVE 2: Critical Thinking: Students will apply critical thinking skills in the analysis of data and formation of well-developed arguments. They will be able to sort and assess the value of information and apply a variety of analysis techniques to arrive at rational answers to complex questions.

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

1. predict the outcome of a simple Mendelian cross;
2. describe a scientific model and apply it to the real world;
3. explain the benefits and costs associated with the release and consumption of transgenic organisms;
4. explain the benefits and costs of cloning plants, humans, and other animals;
5. be able to formulate hypotheses, make predictions, design experiments and interpret data.

LEARNING OBJECTIVE 3: Literate with Technology: Students will demonstrate appropriate skill levels in the use of tools and technologies related to their major fields of study. This will include a knowledge of the underlying theory and limitations of their use.

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

1. correctly use and care for a microscope;
2. design, implement, predict the outcome and evaluate simple biological experiments using available technologies.
3. demonstrate a familiarity with the use of SI units, such as meters, liters and grams.

LEARNING OBJECTIVE 4: Independence of Thought: Students will be independent thinkers, possessing skills needed to make rational, informed decisions. They will possess the ability to combine experience, training, and reason into a considered point of view.

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

1. review an article from current scientific literature, provide a written summary and critically evaluate the significance of the research.

LEARNING OBJECTIVE 5: Lifelong Learning: Students will possess the skills to become lifelong learners by pursuing higher levels of learning/academic scholarship. These skills will include the ability to locate, organize, value, assimilate and communicate information.

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

1. locate and evaluate literature available in libraries and on-line data bases;
2. use interlibrary loan for obtaining literature not available from local libraries.

3. correctly cite sources using the format provided;
4. assimilate and disseminate research results (both from experiments and readings) orally and in print.