

## SYLLABUS

**COURSE # AND TITLE:** BIOL 110, Biology and Society      **# OF CREDITS:** 4 (3+2P)

### 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.

Semester Offered: On Demand

Prerequisites: None

#### *Common Student Learning Outcomes*

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

<i>Learn</i>	<i>Students will actively and independently acquire, apply and adapt skills and knowledge to develop expertise and a broader understanding of the world as lifelong learners.</i>
<i>Think</i>	<i>Students will think analytically and creatively to explore ideas, make connections, draw conclusions, and solve problems.</i>
<i>Communicate</i>	<i>Students will exchange ideas and information with clarity and originality in multiple contexts.</i>
<i>Integrate</i>	<i>Students will demonstrate proficiency in the use of technologies in the broadest sense related to their field of study.</i>
<i>Act</i>	<i>Students will act purposefully, reflectively, and respectfully in diverse and complex environments.</i>

**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 proof;
4. explain the structure of DNA;
5. explain what enantiomers are and how they affect biological systems and drug efficacy;
6. explain how transgenic organisms are created;
7. describe how transgenic organisms are currently being used;
8. explain how a clone is made;
9. describe genetic screening and insurance;
10. describe the composition of the atmosphere;
11. identify and list the sources of greenhouse gases;

12. explain the carbon, nitrogen and water cycles;
13. describe how greenhouse gases influence global temperatures;
14. describe current human population growth trends;
15. describe some of the effects of continued population growth on such things as resource use, urban sprawl and pollution;
16. describe how current practices have led to such disasters as the recent fire seasons and flooding in low-lying countries such as Bangladesh.
17. define what is meant by biodiversity and give examples of global trends in biodiversity;
18. explain the current understanding of phylogenetic relationships between organisms (Tree of Life) and give examples of each major group of organisms;
19. name examples of the local plant and animal biota;
20. explain the basic tenets of and evidence for evolution;
21. explain natural and artificial selection and give examples, such as antibiotic resistance

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, its usefulness and limitations;
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;

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 and conversion of SI units, such as meters, liters and Newtons.

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, guides to journals and on-line data bases;
2. use interlibrary loan for obtaining literature not available from local libraries; use study groups to self-evaluate course progression.

Syllabus developed by \_\_\_\_\_ Date: \_\_\_\_\_

Syllabus reviewed by \_\_\_\_\_ Date: \_\_\_\_\_

**A current syllabus must be on file in the dean's office for every course being taught during a given semester.**