South Central College

BIOL 101 Introduction to Ecology

Course Outcome Summary

Course Information

Description Introduction to Ecology introduces the student to fundamental principles of ecology and focuses on interactions occurring within our natural world. Students will become familiar with interrelationships in nature and investigate population, community, and ecosystem dynamics. A special emphasis will be given to human impacts on the environment. Topics include resource and energy use, biodiversity, climate change and sustainability. This course includes outdoor data collection and off-campus field trips. MNTC Goal Areas 3 and 10. (Prerequisites: READ 0090).

Total Credits 4

Total Hours 80

Types of Instruction

Instruction Type	Credits/Hours
Lecture	3/48
Lab	1/32

Pre/Corequisites

READ 0090

Institutional Core Competencies

Civic Engagement and Social Responsibility - Students will be able to demonstrate the ability to engage in the social responsibilities expected of a community member.

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Explain the parameters of science and scientific inquiry

Learning Objectives

Describe the scope of scientific inquiry

Identify the strengths and limits of science
Explain the role of science in society
Describe the steps employed in scientific methodologies
Evaluate sources of scientific information

2. Engage in the process of scientific inquiry to assess the environment

Learning Objectives

Develop and test hypotheses
Collect and analyze data
Interpret data and form conclusions
Communicate scientific findings

3. Describe the foundation and scope of ecology

Learning Objectives

Define ecology including the levels for which it is studied
Identify important figures and events in the history of ecology
Describe the process and importance of ecological assessments

4. Describe the foundation and scope of environmental science

Learning Objectives

Describe environmental science as a scientific discipline
Compare and contrast ecology and environmental science
Identify important figures and events in the history of environmentalism
Assess the roles of scientific information and social values in environmental decision-making
Compare and contrast different environmental ethics

5. Describe the key features of ecosystems

Learning Objectives

Identify the basic components of an ecosystem
Compare and contrast the fates of energy and matter in an ecosystem
Describe trophic structure and identify its various levels
Identify numerous services provided by ecosystems
Assess the health of various ecosystems

6. Describe the key features of ecological communities

Learning Objectives

Identify the basic components of a community
Describe the ecological niche and identify various types of species
Describe various types of interspecies interactions and provide examples
Assess the health of various communities

7. Describe the key features of biological populations

Learning Objectives

Identify the components of a population
Interpret population growth models
Identify limits to population growth
Differentiate between biotic potential and carrying capacity
Compare and contrast population distribution patterns

8. Examine the nature and process of evolution

Learning Objectives

Identify several factors that contribute to evolution
Differentiate between evolution and natural selection
Illustrate the process of natural selection
Explain the relationship between ecology and evolution

9. Compare and contrast weather and climate

Learning Objectives

State several parameters for which weather and climate are described
Describe several factors that influence Earth's climate and climate patterns
Explain how weather and climate are different
Explain why distinguishing between weather and climate is important

10. Identify human population growth characteristics and trends

Learning Objectives

State the current estimated human population
Describe factors that influence the human population
Identify recent trends in fertility rates, growth rates and life expectancy
Explain current projections for future population growth

11. Evaluate sources of energy for human use

Learning Objectives

Describe the history of energy use
Describe various sources of non-renewable energy
Describe various sources of renewable energy
Assess the advantages and disadvantages of different sources of energy

12. Evaluate the effects of various land-use strategies

Learning Objectives

Describe key properties and types of soil
Explain the economic and ecological impacts of conventional agriculture
Describe sustainable agricultural techniques
Explain the ecological impacts of urbanization

13. Assess the current status of water resources

Learning Objectives

List the key properties of water
Diagram the hydrologic cycle
Identify various forms and relative proportions of water on Earth
Describe human impacts on water resources

14. Assess the impact of human activity on the atmosphere

Learning Objectives

Illustrate the composition and stratification of the Earth's atmosphere
Describe various types of air pollutants and their effects on human health
Describe causes and consequences of stratospheric ozone depletion
Explain the causes and consequences of climate change
Describe several strategies to minimize the impact of climate change

15. Evaluate the current status of biodiversity on Earth

Learning Objectives

Identify different levels for which biodiversity is studied
Explain the importance of biodiversity
Describe several causes of biodiversity loss
Assess strategies for preserving biodiversity

16. Identify several federal regulations aimed at protecting the environment

Learning Objectives

Identify regulations to protect air quality
Identify regulations to protect water quality
Describe key features of the Endangered Species Act
Describe key features of NEPA (National Environmental Policy Act)
Describe key features of Superfund
Identify several challenges to assessing the environment

17. Demonstrate safe laboratory practices

Learning Objectives

Be aware of any hazardous materials used during lab experiments
Handle chemicals and lab equipment in a safe manner

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.