A. Course Description

Credits: 5

Prerequisites:
- BIOL 111 General Biology I
- BIOL 112 General Biology II
- CHEM 111 General Chemistry I
- CHEM 112 General Chemistry II
- MATH 115 College Algebra
- STAT 201 Statistics I

OR
- BIOL 111 General Biology I
- BIOL 112 General Biology II
- CHEM 111 General Chemistry I
- CHEM 112 General Chemistry II
- MATH 208 Applied Calculus

OR
- BIOL 111 General Biology I
- BIOL 112 General Biology II
- CHEM 111 General Chemistry I
- CHEM 112 General Chemistry II
- MATH 210 Calculus I

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: Goal LS - Upper Division Liberal Studies, Goal 10 - People/Environment

This course covers ecosystem theory, nutrient cycling, energy flow, and related global environmental topics including acid rain, greenhouse effect, climate change and mercury pollution. The content and methods of modern ecosystems research are emphasized. Lab activities may include field investigations, lab experiments, and computer modeling. Intended for biology, environmental science, and life sciences teaching majors and other qualified students.


C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Apply the experience with research methods in this field at the level necessary for success in senior undergraduate research.
2. Articulate and defend the actions they would take on various environmental issues.
3. Demonstrate quantitative reasoning skills and competency with algebra and statistics at a level appropriate for graduates of a bachelor's degree program in biology.
4. Describe the basic institutional arrangements (social, legal, political, economic, religious) that are evolving to deal with environmental and natural resource challenges.
5. Design, propose, conduct, interpret, and present the results of an independent laboratory or field experiment in this subject area.
6. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.
7. Explain and apply scientific knowledge in ecosystem ecology, both theoretical and experimental, at the upper division level.
level.
8. Propose and assess alternative solutions to environmental problems.
9. Read and interpret primary scientific literature in ecosystem and global ecology.
10. Recall, explain and apply the concepts, knowledge and vocabulary of ecosystem ecology at the level necessary for success in graduate study in this field.

E. Learning Outcomes (MN Transfer Curriculum)

Goal LS - Upper Division Liberal Studies
   None
Goal 10 - People/Environment
   1. Propose and assess alternative solutions to environmental problems.
   2. Explain the basic structure and function of various natural ecosystems and of human adaptive strategies within those systems.
   3. Discern patterns and interrelationships of bio-physical and socio-cultural systems.
   4. Describe the basic institutional arrangements (social, legal, political, economic, religious) that are evolving to deal with environmental and natural resource challenges.
   5. Evaluate critically environmental and natural resource issues in light of understandings about interrelationships, ecosystems, and institutions.
   6. Articulate and defend the actions they would take on various environmental issues.

G. Special Information

Note: Enrollment limited to Biology, Environmental Science, and Life Science Teaching majors only, except by instructor permission. First day attendance required except by instructor permission. Overlap: ESCI 320 Ecosystem and Global Ecology.