**MOHAWK VALLEY COMMUNITY COLLEGE**

**UTICA-ROME, NY**

**COURSE OUTLINE**

**BI 105, Environmental Science C-3, P-2, Cr-4**

1. COURSE DESCRIPTION:

This course increases student appreciation and interest in human interaction with other organisms and with the physical environment. Topics covered include basic ecological concepts as well as human impact on the earth with an emphasis on selected environmental problems (i.e. natural resource use, pollution, wildlife conservation, agriculture, hazardous waste etc.). The laboratory component supplements lecture topics by providing practical experiences. Field experiences are required.

Corequisite: NA

Prerequisite: NA

1. STUDENT LEARNING OUTCOMES:
2. Students successfully completing the course should have a clear understanding of the concept of sound science and how the study of ecology can be utilized as a bridge between science and society.
3. Students will be able to define ecology and distinguish among the following ecological levels: population, community, ecosystem, and biosphere.
4. Students will understand the concepts of energy and thermodynamics, their implications related to organisms and to basic biological processes such as photosynthesis and cellular respiration.
5. Students will understand the concept of the ecosystem and the roles of biotic and abiotic factors in those systems.
6. Students will understand the following concepts as they apply to ecosystems: Population Dynamics (and the problems of human overpopulation),; The Ecological Niche; How Ecosystems interact with the physical environment; The Cycling of Materials (Biogeochemistry); Major Ecosystems of the World; Human health and toxicology.
7. Students will understand the importance of water as a resource (its importance, use, and problem as a resource).
8. Students will understand the importance of soil as a resource and the environmental Impacts of agriculture.
9. Students will understand the impacts of air pollution and global climate change. Other topics are studied as time allows.
10. MAJOR TOPICS:

Introduction to Environmental Science

Human Impacts on the Environment

Population, Resources, and the Environment

Sustainability, Stewardship, and Sound Science

The Global Environmental Picture

Ecosystems and Energy

Thermodynamics, Photosynthesis, Respiration

Energy Flow Through Ecosystems

Ecosystems and Living Organisms

Evolution and Natural Selection

Interactions Among Organisms

The Ecological Niche and Ecosystem Services

Ecosystems and the Physical Environment

The Cycling of Materials Within Ecosystems

Solar Radiation and The Atmosphere

The Global Ocean, Weather and Climate

Ecosystems and the Physical Environment (cont.)

Human Effects on Biogeochemical Cycles

Internal Planetary Processes

Major Ecosystems of the World

The Earth's Major Biomes

Aquatic Ecosystems

Interaction of Life Zone

Soil Resources: What is Soil?

Soil Formation, Properties, and Problems

Soil Conservation and Regeneration

Population Change and Problems of Overpopulation

Factors that Affect Population Size

Demographics and The Human Population / Quality of Life

Water: A Limited Resource

The Importance of Water

Water Use, Resource and Problems

Water Management and Conservation

Air Pollution

The Atmosphere as a Resource

Air Pollution Effects and Controlling

Regional and Global Atmospheric Change Global Climate Change

Ozone Depletion and Acid Deposition