

## WTCS Repository

# 10-806-112/10-809-112 Principles of Sustainability

## Course Outcome Summary

### Course Information

**Description** Prepares the student to develop sustainable literacy, analyze the interconnections among the physical and biological sciences and environmental systems, summarize the effects of sustainability on health and well-being, analyze connections among social, economic, and environmental systems, employ energy conservation strategies to reduce the use of fossil fuels, investigate alternative energy options, evaluate options to current waste disposal and recycling in the U.S., and analyze approaches used by your community to promote and implement sustainability.

**Total Credits** 3.00

### Pre/Corequisites

**Prerequisite** Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

### Course Competencies

#### 1. Develop sustainable literacy

##### Assessment Strategies

1.1. through an oral report, examination, or written report

##### Criteria

*Your performance will be successful when:*

- 1.1. you describe the science behind sustainability
- 1.2. you explain the guiding principles of sustainability
- 1.3. you analyze the differences between traditional conservation and preservation initiatives and sustainability
- 1.4. you identify the energy sources that we use
- 1.5. you describe key pieces of legislation and public policy related to the sustainability movement
- 1.6. describe what is meant by Systems Thinking and the role this plays in sustainable systems and planning

#### 2. Analyze the interconnections among the physical and biological sciences and environmental systems

##### Assessment Strategies

2.1. through a report or presentation assessing your ecological footprint

## Criteria

*Your performance will be successful when:*

- 2.1. you map out your individual energy types and usage in your home
- 2.2. you use scientific terminology
- 2.3. you follow course presentation/report guidelines
- 2.4. you include and cite outside research (non wikipedia)

### 3. Summarize the effects of sustainability on health and well-being

#### Assessment Strategies

- 3.1. through an oral report, examination, or written report

#### Criteria

*Your performance will be successful when you:*

- 3.1. Identify the standards of health and well-being that are affected by sustainable practices
- 3.2. Explain how air, water, food, and soil quality affect bio-diversity
- 3.3. Evaluate the reasons for sustainability concerns with human population growth

### 4. Analyze connections among social, economic, and environmental systems

#### Assessment Strategies

- 4.1. through an oral report, examination, or written report

#### Criteria

*Your performance will be successful when you:*

- 4.1. Explain how global activities, policies, and decisions impact the sustainability of the planet
- 4.2. Explain how a community can impact local and global sustainability
- 4.3. Explain how an individual can contribute to, or detract from, the sustainability of a community, or system at a broader scale

### 5. Employ energy conservation strategies to reduce the use of fossil fuels

#### Assessment Strategies

- 5.1. through an oral report, examination, or written report

#### Criteria

*Your performance will be successful when you:*

- 5.1. Describe the nature and origin of coal, natural gas, and petroleum
- 5.2. Evaluate political, social, and economic factors of fossil fuel use
- 5.3. Investigate models of energy conservation
- 5.4. Evaluate energy efficiency alternatives such as Energy Star

### 6. Investigate alternative energy options

#### Assessment Strategies

- 6.1. through an oral report, examination, or written report

#### Criteria

*Your performance will be successful when you:*

- 6.1. Describe the nature, origin, and potential of alternatives to fossil fuels
- 6.2. Analyze different forms of alternative energy (wind, geothermal, nuclear, bio-mass, hydropower, solar, tidal and wave) for varied applications
- 6.3. Describe how humans can harness wind, geothermal or other alternative energies
- 6.4. Identify "best uses" for assorted alternative energy sources

### 7. Evaluate options to current waste disposal and recycling in the U.S.

#### Assessment Strategies

- 7.1. through an oral report, examination, or written report

## Criteria

*Your performance will be successful when you:*

- 7.1. Describe how nature serves as a model for sustainable principles (eco-mimicry)
- 7.2. Summarize and compare the types of waste we generate
- 7.3. Evaluate various options to managing waste
- 7.4. Describe conventional waste disposal methods (landfills and incineration)
- 7.5. Evaluate approaches for reducing waste (source reduction, reuse, composting, and recycling)
- 7.6. Discuss industrial solid waste management and principles of industrial ecology
- 7.7. Assess issues in managing hazardous waste and persistent chemicals

## **8. Analyze approaches used by your community to promote and implement sustainability**

### Assessment Strategies

- 8.1. through an oral report, examination, or written report

### Criteria

*Your performance will be successful when you:*

- 8.1. Locate community resources that facilitate sustainability
- 8.2. Identify local laws and ordinances that support sustainability