**Wisconsin Indianhead Technical College**

# 10806112 Principles of Sustainability

## Course Outcome Summary

### Course Information

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|---|---|
| **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. |
| **Instructional Level** | Associate Degree |
| **Total Credits** | 3.00 |
| **Total Hours** | 48.00 |

**Types of Instruction**

| Instruction Type | Credits/Hours |
|---|---|
| Classroom Presentation (Lecture/Demonstration/Discussion) | 3/48 |

### Course History

| | |
|---|---|
| **Revised By** | Erin Winesburg (15237468) |
| **Last Approval Date** | 1/14/2014 |

### Course Competencies

**1. Develop sustainable literacy**
***Domain*** *Cognitive* ***Level*** *Synthesis* ***Status*** *Active*

**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. you describe what is meant by Systems Thinking and the role this plays in sustainable systems and planning

**Learning Objectives**

1.a. Describe the science behind sustainability
1.b. Explain the guiding principles of sustainability
1.c. Analyze the differences between traditional conservation and preservation initiatives and sustainability
1.d. Identify the energy sources that we use
1.e. Describe key pieces of legislation and public policy related to the sustainability movement
1.f. 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

***Domain*** *Cognitive* ***Level*** *Analysis* ***Status*** *Active*

**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)

**Learning Objectives**

2.a. Explain the role of chemistry, physics, biology, geological, and microbial sciences in the broader environment
2.b. Outline the scientific method
2.c. Explain the scientific method
2.d. Describe science and its relation to environmental problems facing society
2.e. Define the science of ecology
2.f. Describe the nature of environmental systems

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

***Domain*** *Affective* ***Level*** *Internalizing* ***Status*** *Active*

**Assessment Strategies**

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

**Criteria**

*Your performance will be successful when you:*

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

**Learning Objectives**

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

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

***Domain*** *Cognitive* ***Level*** *Analysis* ***Status*** *Active*

**Assessment Strategies**

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

**Criteria**

*Your performance will be successful when you:*

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

**Learning Objectives**

4.a. Explain how global activities, policies, and decisions impact the sustainability of the planet
4.b. Explain how a community can impact local and global sustainability
4.c. 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

***Domain*** *Cognitive* ***Level*** *Evaluation* ***Status*** *Active*

**Assessment Strategies**

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

**Criteria**

*Your performance will be successful when you:*

5.1. you describe the nature and origin of coal, natural gas, and petroleum
5.2. you evaluate political, social, and economic factors of fossil fuel use
5.3. you investigate models of energy conservation
5.4. you evaluate energy efficiency alternatives such as Energy Star

**Learning Objectives**

5.a. Describe the nature and origin of coal, natural gas, and petroleum
5.b. Evaluate political, social, and economic factors of fossil fuel use
5.c. Investigate models of energy conservation
5.d. Evaluate energy efficiency alternatives such as Energy Star

## 6. Investigate alternative energy options

***Domain*** *Cognitive* ***Level*** *Application* ***Status*** *Active*

**Assessment Strategies**

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

**Criteria**

*Your performance will be successful when you:*

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

**Learning Objectives**

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

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

***Domain*** *Cognitive* ***Level*** *Evaluation* ***Status*** *Active*

**Assessment Strategies**

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

**Criteria**

*Your performance will be successful when you:*

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

**Learning Objectives**

7.a. Describe how nature serves as a model for sustainable principles (eco-mimicry)
7.b. Summarize and compare the types of waste we generate
7.c. Evaluate various options to managing waste
7.d. Describe conventional waste disposal methods (landfills and incineration)
7.e. Evaluate approaches for reducing waste (source reduction, reuse, composting, and recycling)
7.f. Discuss industrial solid waste management and principles of industrial ecology
7.g. Assess issues in managing hazardous waste and persistent chemicals

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

***Status*** *Active*

**Assessment Strategies**

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

**Criteria**

*Your performance will be successful when you:*

8.1. you locate community resources that facilitate sustainability
8.2. you identify local laws and ordinances that support sustainability

**Learning Objectives**

8.a. Locate community resources that facilitate sustainability
8.b. Identify local laws and ordinances that support sustainability

## Course Learning Plans and Performance Assessment Tasks

| Type | Title | Source | Status |
|---|---|---|---|
| LP | (No Title) | Course | Active |
| LP | (No Title) | Course | Active |