# Environmental Resources & Ecology Course No. 37506 Credit: 1.0

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes:Natural Resources and Environmental Sustainability (01.0000); Biochemistry (14.1401)

Course Description: **Application Level:** Courses combine the fields of ecology & conservation with planning for the efficient use and preservation of land, water, wildlife, and forests. Within the general area of natural resources management, these courses usually cover specific topics & uses, such as hunting or fishing preserves, forest production and management, wildlife ID, production and/or ecosystems management and preservation, and human outdoor recreation.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Our Natural Resources

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Research and debate one or more current issues related to the conservation or preservation of natural resources. |  |
| 1.2 | Conduct a field study of an ecosystem, and record and document observations of species interactions. |  |

## Benchmark 2: Classify Natural Resources

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Conduct a field inventory of trees and other woody plants, and record and document findings.  |  |
| 2.2 | Conduct a field inventory of herbaceous plants, and record and document findings. |  |
| 2.3 | Conduct a field inventory of wildlife species, and record and document findings. |  |
| 2.4 | Conduct a field inventory of aquatic species, and record and document findings. |  |
| 2.5 | Conduct a field inventory of rock, mineral and soil types, and record and document findings.  |  |

## Benchmark 3: Safety Plan

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Demonstrate appropriate responses to accidents and injuries that occur in an outdoor environment.  |  |
| 3.2 | Demonstrate appropriate responses for disasters involving biohazardous materials.  |  |

## Benchmark 4: Cartographic Skills

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Employ Global Positioning System and Geographic Information Systems technologies to inventory features in natural resource management. |  |

## Benchmark 5: Measure and Survey

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Conduct resource inventories and population studies to assess resource status. |  |

## Benchmark 6: Enhancement Techniques

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Create and implement a stream enhancement plan. |  |
| 6.2 | Formulate a timber stand improvement plan for a forest.  |  |
| 6.3 | Conduct a survey of a habitat and devise a comprehensive improvement plan.  |  |
| 6.4 | Evaluate a rangeland and develop a management plan for improvement.  |  |
| 6.5 | Evaluate the impact of recreational activities on natural resources and create an improvement plan. |  |
| 6.6 | Assess marine and coastal natural resources and prepare an improvement plan. |  |

## Benchmark 7: Interpret Laws

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Abide by specific laws pertaining to natural resource systems.  |  |
| 7.2 | Demonstrate mitigation techniques for natural resources.  |  |

## Benchmark 8: Ecological Concepts and Principles

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Determine the human influence on biogeochemical cycles. |  |
| 8.2 | Analyze ecosystems functions of a watershed. |  |
| 8.3 | Classify and predict the behavior of local streams.  |  |
| 8.4 | Create, enhance and mange riparian zones and riparian buffers.  |  |
| 8.5 | Conduct a field study to determine the stages of ecological succession in a community of organisms.  |  |
| 8.6 | Create and implement a management plan based on a population study for a community of organisms. |  |
| 8.7 | Develop and implement a plan to reduce the impact of invasive species on natural resources.  |  |
| 8.8 | Create and implement a plan to prevent or limit the effects of pollution on natural resources. |  |
| 8.9 | Monitor the effects of climate on plants and wildlife.  |  |

## Benchmark 9: Natural Resource Products

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Harvest forest products according to principles of sustainable forest management.  |  |
| 9.2 | Process forest products.  |  |
| 9.3 | Formulate a management plan for protecting wildlife from overexploitation.  |  |
| 9.4 | Process harvested wildlife.  |  |
| 9.5 | Give examples of methods used to extract and process minerals and ores.  |  |
| 9.6 | Give examples of methods used to extract and process fossil fuels.  |  |
| 9.7 | Describe hydroelectric generation techniques and procedures, and prepare a report on the impacts on the impacts of hydroelectric dams on aquatic systems.  |  |
| 9.8 | Evaluate a natural resources site and recommend opportunities for recreational activities.  |  |
| 9.9 | Harvest aquatic species according to sustainable management principles.  |  |
| 9.10 | Process harvest aquatic species.  |  |

## Benchmark 10: Manage Fires

### Competencies

| **#** | **Description** | **rating** |
| --- | --- | --- |
| 10.1 | Demonstrate the application of fire application of fire suppression and fire safety techniques. |  |

## Benchmark 11: Plant and Wildlife Diseases

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 11.1 | Explain management techniques used to reduce infection and spread of plant diseases in natural resources.  |  |
| 11.2 | Explain wildlife disease management techniques. |  |

## Benchmark 12: Insect Infestations

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 12.1 | Describe techniques used to manage pests of natural resources.  |  |

## Benchmark 13: Communicate to the Public

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 13.1 | Communicate a natural resource message through the press, radio, television, or public appearances. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

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