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

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

Pathways and CIP Codes: **Natural Resources & Environmental Sustainability (03.0101);**

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

[pathwayshelpdesk@ksde.org](mailto:pathwayshelpdesk@ksde.org)



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

The Kansas State Department of Education does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities and provides equal access to any group officially affiliated with the Boy Scouts of America and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: KSDE General Counsel, Office of General Counsel, KSDE, Landon State Office Building, 900 S.W. Jackson, Suite 102, Topeka, KS 66612, (785) 296-3201.