# Introduction to Energy Course No. 41100 Credit: 0.5

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

Pathways and CIP Codes:Energy (17.2071)

Course Description: An **Introductory course** designed to teach students about the occupations in the Energy field and the skills required for those occupations. Required for pathway approval.

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: Energy basics

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Understand the concepts of energy: |  |
|  | * eight forms of energy & how energy can perform work
 |  |
|  | * differentiate between potential energy and kinetic energy
 |  |
|  | * how energy can be transformed.
 |  |
| 1.2 | Understand how humans utilize energy: |  |
|  | * what types of energy is used by humans
 |  |
|  | * how humans have historically used energy
 |  |
|  | * how energy use has changed over time specifically with industrial revolution.
 |  |
|  | * how new forms of renewable and alternative energy sources may be used in the future.
 |  |
| 1.3 | Demonstrate an ability to understand and interpret data as it relates to energy : |  |
|  | * read graphs and charts to analyze data and to communicate information about energy
 |  |
|  | * how data can be used to understand and create opportunities around energy
 |  |
|  | * how computers, data, analytics, and machine learning can be used to optimize energy generation and consumption in the United States.
 |  |
| 1.4 | Understand what careers are available in the energy field. |  |

## Benchmark 2: Energy theory and application

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Understand how energy is generated and distributed: |  |
|  | * types of power generation
 |  |
|  | * electrical power distribution lines
 |  |
|  | * natural gas, water and sewer distribution
 |  |
|  | * how energy is metered, including smart meters, and billed.
 |  |
| 2.2 | Understand how energy is used in a building:  |  |
|  | * Building envelope
 |  |
|  | * Lighting systems
 |  |
|  | * Heating, cooling, and ventilation
 |  |
|  | * Water consumption
 |  |
|  | * Other.
 |  |
| 2.3 | Perform an energy audit in a building: |  |
|  | * Conduct energy use benchmarking using historical energy consumption
 |  |
|  | * Identify equipment, systems and processes that use energy in a building
 |  |
|  | * Identify the factors that impact energy use in a building.
 |  |
| 2.4 | Identify opportunities to optimize energy use in a building: |  |
|  | * utilize building data to identify opportunities for energy optimization
 |  |
|  | * calculate the cost and other impacts of optimized energy use.
 |  |
| 2.5 | Present findings and recommendations from energy audit: |  |
|  | * create visual aids
 |  |
|  | * Oral presentation to school district personnel and/or community members.
 |  |

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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