Introduction to Energy and the Energy Industry: National Energy Education Department and CEWD

Recommended for Grades 9-12

Module 1: Science of Energy

Curriculum Source: NEED *

Total Instructional Time: 6 hours

1. Explain the main things energy enables us to do.
2. Differentiate between forms and sources of energy.
3. Describe how energy is stored in the major energy sources.
4. List the forms of energy and give examples.
5. Explain energy transformations.
6. Trace the energy flow of a system.

MODULE 2: Introduction to Energy Curriculum

Curriculum Source: NEED (1) and NEED (2)

Total Instructional Time: 4 hours

1. Define potential and kinetic energy.
2. Identify the forms of potential and kinetic energy.
3. Describe the sources of energy.
4. Describe the term renewable energy.
5. Describe the term nonrenewable energy.

MODULE 3: Renewable Energy Sources

Curriculum Source: NEED (1) and NEED (2)

Total Instructional Time: 21 hours

1. Define biomass, geothermal, hydropower, solar, wind, and hydrogen as sources of renewable energy.
2. Describe how biomass, geothermal, hydropower, solar, wind, and hydrogen generate energy.

MODULE 4: Nonrenewable Energy Sources

Curriculum Sources: NEED (1) and NEED (2) and NEED Energy Expos Guide

Total Instructional Time: 19 hours

1. Define coal, natural gas, petroleum, uranium, and propane as sources of non-renewable energy.
2. Describe how coal, natural gas, petroleum, uranium, and propane generate energy.

MODULE 5: Electricity

Curriculum Source: NEED (1) and NEED (2)

Total Instructional Time: 6 hours

1. Describe how electricity is transported from the plant to the consumer.
2. Describe issues about electricity use.
3. Describe emerging technologies for electricity use.

MODULE 6: Efficiency and Conservation

Curriculum Source: NEED (Lessons 4, 5, 6)

Total Instructional Time: 6 hours

1. Explain the relative efficiencies of incandescent, halogen, fluorescent, and light emitting diode lighting.
2. Determine the life cycle cost for each of the types of lighting found in schools and evaluate the data to determine the most economic choice.
3. Explain the impacts one energy-consuming system might have on another.
4. Justify upgrade choices based on efficiency and payback period data.
5. Evaluate the energy use of a school building at a basic, grade-appropriate level.
6. Interpret data and make recommendations for energy savings based on that data.

MODULE 7: Energy Careers

Curriculum Source: Center for Energy Workforce Development

Total Instructional Time: Self-paced

1. Identify energy career job positions in the energy industry.
2. Describe each energy career position.
3. Identify entry requirements for each energy career position.
4. Conduct a presentation on an energy career of your choice using PPT.

***National Energy Education Development project.**