ENERGY CAREER ACADEMY FRAMEWORK GRADE 9

THEME: Introduction to Energy and the Energy Industry/High Performance
CREDENTIALS: CMS High Performance Certificate

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
- Energy Infobooks available at NEED(1)
- Energy Infobook Activities available at NEED(2)
Total instructional and testing time: 4 hours

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

MODULE 3: Renewable Energy Sources
Curriculum Source: NEED
- Energy Infobooks available at NEED(1)
- Energy Infobook Activities available at NEED(2)
Total instructional and testing 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: Non-renewable Energy Sources

Curriculum Source: NEED
- Energy Infobooks available at NEED(1)
- Energy Infobook Activities available at NEED(2)
Total instructional and testing 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
- Energy Infobooks available at NEED(1)
- Energy Infobook Activities available at NEED(2)
Total instructional and testing time: 6 hours

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

MODULE 6: Efficiency & Conservation

Curriculum Source: NEED (Lessons 4, 5, and 6)
Teacher Guide available at NEED
Student Guide available at NEED
Total instructional and testing 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. 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 the data.
MODULE 7: Energy Careers Curriculum

Curriculum Source: Teachers Section of Get Into Energy/Get Into STEM, available at stem.getintoenergy.com

Total instructional and testing time: 4 hours

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.

MODULE 8: CSM High Performance Course and Credential/CSM+ Courses

Curriculum Source: CSMlearn, available at csmlearn.com

• Contact Mirriam Goldbererg at miriam@csmlearn.com
• Cost is approximately $39 per student, if teacher(s) at the school can serve in the coaching role.

Total instructional and testing time: Approximately 60 hours dedicated time to CSM course and CSM+ courses, but will vary by student.

1) Apply key quantitative skills, such as mental math, basic statistical concepts, measurement, and more.
2) Appraise information from a variety of forms of complex informational text and graphs.
3) Analyze problems using a variety of advanced problem-solving strategies.
4) Develop new skills independently through reading; and develop and formulate strategies to solve quantitative problems, including quantitative and problem-solving.

*National Energy Education Development project.