

## PRE-GED LESSON PLAN - Science (Level 6.0 - 8.9)

**COMPETENCY:** 3.07 The student will recognize that energy interacts with matter and that energy may be changed in form.

**CONNECTIONS:** 1.06, 4.06, 4.10, 6.03, 6.04. **Optional:** 4.13, 6.01.

**Classroom Procedure:**

1. Begin class by throwing a ball to the students. This is an example of kinetic energy, the energy of an object in motion.
2. Write all the forms of energy found in the vocabulary on the board.
3. Have a volunteer write the definition of kinetic energy on the board.
4. Have a student repeatedly roll the ball down an inclined plane (desk). Then set the ball on a flat surface.
5. Explain that potential energy is the amount of energy an object has because of its position.
6. Have a volunteer write the definition of potential energy on the board.
7. Explain that energy that comes from motion is called mechanical energy. Toss the ball around the room to demonstrate.
8. Write the definition of mechanical energy on the board; kinetic and potential energy are forms of mechanical energy.
9. Optional exercise: Using the thermometer, have students record the temperature on the board.
10. Place the thermometer under desk lamp. Have the class predict what will happen.
11. Explain that the thermometer is filled with mercury (an element) that expands within a glass tube when heated.
12. Explain that the light is a form of energy that travels in waves and is called radiant energy.
13. Have a student write the definition of radiant energy on the board.
14. Have students read (orally or silently) pages 216-220, "Energy" in the Contemporary Pre-GED Science text or pages 168 - 173, "Nuclear Fission" and pages 202 - 207, "Light and Lasers" in the Steck-Vaughn Pre-GED Science text.
15. The class has read about nuclear energy; have a volunteer define nuclear energy and write the definition on the board.
16. Nuclear energy is created when the nucleus of an atom is changed or split.
17. The class has read about chemical energy and studied it in lesson 3.05; have a student write the definition on the board.
18. Remind them that chemical energy is released when two elements or substances are combined in a reaction.
19. Tell the students that all these types of energy change form.
20. Optional: Read the last paragraph on page 216 of the Contemporary Pre-GED text aloud to the class.
21. Pause and leave out the vocabulary words as you read the paragraph. Have the class fill in the missing words aloud.
22. Erase the definitions from the board and have the students complete the vocabulary worksheet.

**Vocabulary:**

chemical energy  
 electrical energy  
 kinetic energy  
 mechanical energy  
 nuclear energy  
 potential energy  
 radiant energy

**Teacher-Made or Alternative Materials:**

**Textbooks:**

Contemporary Pre-GED Science:  
216-220.  
 Steck-Vaughn Pre-GED Science:  
168-173, 202-207.

**Materials Needed**

1 ball or round object.  
 one household thermometer  
 desk lamp  
 vocabulary worksheet

**Supplemental Resources:**

<http://www.particleadventure.org>  
<http://www.brainpop.com>  
<http://www.encarta>  
<http://www.explorescience.com>

**Supplemental Experiment**

Chemical Energy

**Evaluation**

The student will be able to distinguish between the definitions of seven types of energy and be aware that energy changes form.

## ***Pre-GED Science (3.07)***

### **Optional Experiment**

#### **Chemical Energy**

##### Materials Needed:

- 1 glass jar with lid that is large enough to hold a household thermometer.
- 1 household thermometer
- 1 steel wool pad (saved from experiment conducted in 3.05)
- 1/4 cup vinegar (saved from experiment conducted in 3.05)

Experiment Procedures: Either the instructor or the student can conduct this part of the experiment. The student will need to be directed.

1. Put the thermometer in the jar and place the lid on the jar.
2. Have a student record the temperature of the thermometer in the glass jar on the board, and the time of day.
3. Remove the thermometer from the glass jar.
4. Soak the steel wool in vinegar. Squeeze excess vinegar out of the steel wool pad.
5. Wrap the steel wool pad around the base of the thermometer.
6. Return the thermometer with the steel wool to the glass jar.
7. Close the lid and record the temperature on the thermometer in five minute increments for at least 15 minutes.
8. Have the students write these temperatures and times of day on the board.
9. Have students graph the rising temperature.

Conclusion: The class will notice that the temperature rises. The chemical reaction of the oxygen combining with the iron produces heat energy.

**Pre-GED Science (3.07)**

**Vocabulary Worksheet**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Read each sentence carefully and decide which form of energy it describes.  
Pencil in the correct answer.

1. Atoms collide within stars. ① ② ③ ④ ⑤ ⑥ ⑦
2. Energy from the sun reaches the Earth in light waves. ① ② ③ ④ ⑤ ⑥ ⑦
3. When plants die, after many years, they produce oil, coal and gas. ① ② ③ ④ ⑤ ⑥ ⑦
4. These fossil fuels are used to produce energy. ① ② ③ ④ ⑤ ⑥ ⑦
5. Humans eat food, which gives them energy to run and be active. ① ② ③ ④ ⑤ ⑥ ⑦
6. The pitcher is getting ready to throw the baseball. ① ② ③ ④ ⑤ ⑥ ⑦
7. The batter hits the ball and it flies through the air. ① ② ③ ④ ⑤ ⑥ ⑦

Word Bank
① Chemical energy
② Electrical energy
③ Kinetic energy
④ Mechanical energy
⑤ Nuclear energy
⑥ Potential energy
⑦ Radiant energy