Energy Systems Curriculum Map

Unit 1: Electricity and Magnetism

- Lesson 01 Charges *(3 days)*
- Lesson 02 Electric Fields *(2 days)*
- Lesson 03 Electromagnetic *(3 days)*
- Lesson 04 Series and Parallel *(3 days)*
- Lesson 05 Ohms *(2 days)*
- Lesson 06 Assessment *(1 days)*

Unit 2: Nuclear Physics

- Lesson 01 The Atom *(1 days)*
- Lesson 02 Atomic Dating *(3 days)*
- Lesson 03 Radioactivity *(1 days)*
- Lesson 04 Decay *(1 days)*
- Lesson 05 History of Atomic Power *(3 days)*

Unit 3: Power Generation – Conventional

- Lesson 01 Energy *(4 days)*
- Lesson 02 Power Plants *(3 days)*
- Lesson 03 Power Generation *(3 days)*

Other Documents:

- ✓ Unit Plans
- ✓ Class Materials List
- ✓ Class Supplies Order info
- ✓ Model Layout Pattern
- ✓ Energy Board Game
- ✓ Generic Templates and Forms
- ✓ Vernier Computer labs

Unit 4: Power Grid – Smart Transmission and Distribution

- Lesson 01 AC DC *(1 days)*
- Lesson 02 Power Transmission *(2 days)*
- Lesson 03 Power Distribution *(2 days)*
- Lesson 04 Smart Grid *(2 days)*

Unit 5: Power Generation – Renewable

- Lesson 01 Renewable Energy *(5 days)*
- Lesson 02 Solar Energy *(2 days)*
- Lesson 03 Wind Energy *(3 days)*
- Lesson 04 Bio-fuels *(3 days)*

Unit 6: Energy Resources and Consumption

- Lesson 01 Future Energy *(3 days)*
- Lesson 02 Show me the money *(1 days)*
- Lesson 03 Energy use *(3 days)*
- Lesson 04 Final Assessment *(1 days)*

Lesson Plan

Energy Systems
Unit 5: **Power Generation - Renewable**
Lesson 01 renewable energy

1. **State Standard(s) Being Taught:**
   CLE 5.1 Understand the potential of solar energy
   CLE 5.2 Understand the potential for wind energy
   CLE 5.3 Understand the potential for biomass and biofuels

2. **Objective(s) For This Lesson**

   5.1 Describe solar energy and how it is harnessed.
   5.2 Explain the significance and historical foundations of solar energy and its pioneers (Horace de Saussure and Clarence Kemp).
   5.3 Explain the difference between passive solar and active solar.
   5.15 Discuss the major sources of biomass.
   5.8 Describe wind energy and the way it is harnessed.
   5.16 Define biofuels (e. g. ethanol, biodiesel, and methanol).
   5.9 Explain the significance of wind energy and its pioneers (Charles Brush).
   5.4 Describe a central receiver system.
   5.6 Draw and label a diagram of a solar thermal plant.

3. **Procedures**
   1) Using introduction videos (modern marvels) introduce all these topics.
   2) Follow along notes sheet for videos
   3) End class with a discussion about positives, and negatives of all three types compared with conventional forms of energy creation.
   4) Possible presentation on which one student groups think is best and why.
   5) Introduction power points
   6) Possible demonstration with magnifying lenses or parabolic mirror
   7) PV plant, Solar Thermal plant, wind farm practice sheet.
4. **Materials**
   1) Modern Marvels (renewable energy)
   2) Follow along DVD practice sheet
5. **Assessment**
   1) Follow along practice sheet
   2) Class discussion
6. **Homework:**
7. **Web resources:**
   a. http://www.renewableenergyworld.com
   b. www.getsolar.com
   c. www.solardev.com/Seia/makingelec.php