Mayfield High School

Lesson Plans

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Biology

November 30—December 22, 2015

Learning Targets:

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| **Achievement Scale** |
| **Content Area:** Energy and the Environment | **Grade Level:** 11/12 |
| **Unit:** Energy an Overview (Chapter 17) |
| **Learning Goals:*** 17.1 I can define energy and explain how it is used. **Wed 12/2, FA 12/3**
* Define energyand differentiate between kinetic and potential energy.
* Identify different forms of energy.
* Describe how human society uses energy resources.
* 17.2 I can explain how fossil fuels form, and how are they obtained and used. **Th12/3, Fri 12/4 (FA)**
* Explain how fossil fuels formed.
* Describe the uses of coal and how it is removed from the ground.
* Describe the uses of oil and how it is extracted.
* Explain the characteristics and uses of natural gas.
* Predict the future of fossil fuels.
* 17.3 I can describe the problems associated with fossil fuel use. **Mon 12/7-Wed 12/8 (FA)**
* Explain how pollutants released by fossil fuels damage health and the environment.
* Describe the environmental and health effects of mining and drilling.
* Explain the implications of dependence on foreign countries for fossil fuels.
* Explain why energy conservation is important.
* 17.4 I can explain advantages & disadvantages of nuclear energy. **Thurs 12/9—Mon 12/14 (FA)**
* Relate nuclear fission to the production of energy.
* Describe how a nuclear power plant generates electricity.
* Identify the advantages and disadvantages of nuclear power.
* Contrast nuclear fusion with nuclear fission, and explain the issues related to nuclear fusion.
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| **Score 4:** Student demonstrates in-depth inferences and applications of the learning goal(s) and can reconstruct and apply their knowledge from limited information:The student:* Identify examples and practical uses of:
* I can analyze
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| **Score 3:** Student demonstrates no major errors or omissions regarding the learning goal(s) that were explicitly taught:The student can:* Explain the difference between
* Diagram how
* Distinguish between, given a scenario, can identify and discuss different examples of
* Given a scenario, discuss the
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| **Score 2:** The student demonstrates no major errors or omissions regarding the simpler details and processes that support the learning goal(s).The student can:* Define
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| **Score 1:** With help (being given word banks, manipulated equations, retakes), the student demonstrates a partial understanding of the simpler details and processes that support the learning goal(s). |
| **Score 0:** Even with help, no success |
| **Score 4 Example Assessment Items:** | **Academic Vocabulary:**17.1 energy, kinetic energy, potential energy, combustion, energy efficiency, renewable energy, nonrenewable energy, electricity17.2 strip mining, subsurface mining, petroleum, petrochemical, oil sands, oil shale, methane hydrate17.3 acid drainage, energy conservation17.4 nuclear energy, nuclear fission, nuclear reactor, meltdown, nuclear waste, nuclear fusion |
| **Score 3 Example Assessment Items:****Score 2 Example Assessment Items** |
| **District Mission:**Every student. Every day. | **District Vision:**A promise of learning, dignity, and respect for all. |

Instructional materials and strategies:

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| UnitDay | Learning goals | Instructional strategies | Materials required | Assessments |
| Wed11/18 |  | Jigsaw—16.4 & National Geographic Nov 2015 issue—climate change reduction strategiesPart 1—read individuallyHmw—complete individual reading and notetaking | Copies of climate change issue articleHighlightersConcept maps to complete—levels of responsibility | Responsibility for reading & notetaking observed. |
| Thurs11/19 |  | Jigsaw part 2: meet with groups to develop a visual aid and to prepare presentations for other jigsaw group membersHmw—study guide 16.4 | Jigsaw group plansStudy guide copiesLarge sticky note pads in different colorsChart markers & chart paper | Poster assessment |
| Fri11/20 |  | Meet with original Jigsaw groups to share poster analysis & help improve the presentationsHmw—Stanford notes 16.4, review notes from jigsaw | Stanford notes handouts | Interaction with students groups |
| Mon 11/23 |  | sharing & notetaking in “home group”hmw—compile & complete all materials for open note quiz on 16.4 |  |  |
| Tues11/24 |  | Lesson notes, 16.4Time for completing Stanford notes OR for working on ch 17 homeworkHmw—open jigsaw & study guide & Stanford note quiz, 16.4 | Lesson notes handout 16.4Chapter 17 homework copies |  |
| Mon11/30 |  | Review 16.4 as needed (solutions)Reading/discussion—central case of unit—flooding of Maldees islands | All lesson materials need to be posted at website for use in review | Homework checked |
| Tues12/1 |  | Open note quiz 16.4Lesson-chapter 17.1Hmw—Stanford notes 17.1 | Test copiesLesson notes h.o. for 17.1 | quiz |
| Wed 12/2 |  | Video—how electricity is generated, how internal combustion engines work, then energy conversions tracing for tasks like running an air conditionerConcept map—17.1Work time—complete Stanford notes 17.1 & 17.1 study guide by tomorrow | Empty concept maps 17.1 |  |
| Thurs12/3 |  | FA—chapter 17.1, interventionsLesson notes—17.2Homework: Stanford notes 17.2 | FA copiesLesson notes handout | Homework checkedFA |
| Fri12/4 |  | Prelab—properties of fossil fuelsLab—properties of fossil fuelsHmw: study guide 17.2 | Prelab and lab handoutsLab materials | Check homework |
| Mon12/7 |  | Concept map to review 17.2 FA 17.2 & interventionsVideo clips—methods for extracting fossil fuels | Blank concept mapsFA copiesVideo clips | FACheck homework |
| Tues12/8 |  | Oil spill video clips & discussion/notesLesson notes 17.3Hmw: Stanford notes 17.3 | Video clipsLesson notes 17.3 handout |  |
| Wed12/9 |  | Central case—oil spills & discussionFracking/shale oil current events discussion (pros & cons)Hmw: study guide 17.3 | Current events lesson readings/video clips |  |
| Thurs12/10 |  | More current events on pros/cons of fossil fuel extractionOpen note quiz—17.2 & 17.3 |  | QuizHomework check |
| Fri12/11 |  | Preview—what do you know about nuclear power?Animations & film clips, discussion—nuclear power plant operation, nuclear waste storage, nuclear accidentsHmw—stanford notes—17.4 | Multimedia resources for nuclear power |  |
| Mon12/14 |  | Lesson—nuclear power 17.4Concept mapping—17.4Hmw—stanford notes, study guide 17.4 | 17.4 notes handout | Check homework |
| Tues12/15 |  | Open note quiz 17.4Hmw-Final exam prep | Quiz copies | Check homeworkquiz |
| Wed12/16 |  | Final exam prep | All materials for final exam review must be loaded onto webpage |  |
| Thurs12/17 |  | Practice final exam & interventions | All materials for final exam review must be loaded onto webpagePractice final exam copies & key | Practice final results observed |
| Fri12/18 |  | 1st & 7th period final exams | Final exam copies | Final exam |
| Mon12/21 |  | No class or exams |  |  |
| Tuesday 12/22 |  | No class or exams |  |  |