

Colorado Energy Course Scope and Sequence

Course Name	Energy Basics- Middle School		Course Details Course = 0.50 Carnegie Unit Credit		This course can be a 6-9 week exploratory course or dive deeper into the content for a semester long Energy course.					
Course Description	This course will provide middle school students with the baseline understanding of the energy industry and concepts as they progress towards a high school Energy program. It walks through forms of energy, renewable vs. non-renewable, measurements, and use of energy from different energy sectors. This course can be a stand alone semester course diving deeper into the concepts and applications or a basic surface level understanding course as a 6 week exploratory. Resources linked in the far right column provide some context to the outcomes/measurements and resources for teachers to lean on through the Energy Information Administration system.									
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.									
SceD Identification # Schedule calculation based on 60% of a semester instructional time. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics. All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills										
Unit Number, Title and Brief Description	CTE or Academic Standard Alignment	Com Performa	petency / nce Indicator		Outcome / Measurement	Resources				
Energy Basics	Forms of Energy Renewable vs. Non- renewable energy	 Identify th of energy has the al Differentia renewable 	e different forms and how energy bility to do work. te between and non- e energy.	 Define chemic Define energy biomas Define petrole natural 	heat, light, motion, electrical, al, nuclear, and gravitational energy. renewable energy sources of solar , geothermal energy, wind energy, ss, and hydropower. non-renewable energy sources of um products, hydrocarbon gas liquids, gas, coal, and nuclear energy.	https://www.eia.gov/kid s/what-is- energy/energy- basics.php				
Forms of Energy	Potential vs. Kinetic Energy	Differentiate b and kinetic en	etween potential ergy.	 Define the ene mechai energy Define waves, substai therma energy 	potential energy as stored energy and ergy of position including chemical, nical, nuclear, and gravitational kinetic energy as the motion of electrons, atoms, molecules, nces, and objects including radiant, l, motion, sound, and electrical	https://www.eia.gov/kid s/what-is- energy/forms-of- energy.php				

	Energy Transformations Sources of Energy	Explain how energy is neither created nor destroyed Describe the sources of energy and their total energy consumption	 Outline energy transformations ; chemical - motion, radiant - chemical, electrical - thermal Identify energy consumption by source; biomass, petroleum, hydropower, natural gas, wind, coal, solar, nuclear, geothermal.
Energy Units Basic	Units of Measurement	Identify units for comparing energy. Convert energy sources into different physical units to BTU.	 Describe the various physical units to measure different types of energy or fuels, which includes; barrels or gallons of liquid petroleum fuels, cubic feet for natural gas, tons for coal, and kilowatt hours for electricity. Apply the btu content of common energy units in square footage of specific facilities.
Energy Use Basics	Energy use in the US	Recognize the percentage share of total primary energy consumption in the US energy use sectors	- Explain the use of energy consumption in the industrial, transportation, residential, commercial, and electrical power sector. basics.php
Energy and the Environment	The Greenhouse Effect	Explain the greenhouse gas effect and its impact on global warming and climate change.	 Identify the major greenhouse gases that result from human activity (carbon dioxide, methane, nitrous oxide, and industrial gases like hydrofluorcarbons, perfluorcarbons, sulfer hexafluoride, and nitrogen trifluoride) Assess the source of the various greenhouse gases. Discuss the global carbon cycle and its affect on greenhouse gas emissions and atmospheric concentration increase over the past 150 years. Identify the major greenhouse gases that https://www.eia.gov/kid s/using-and-saving- energy/greenhouse- gases.