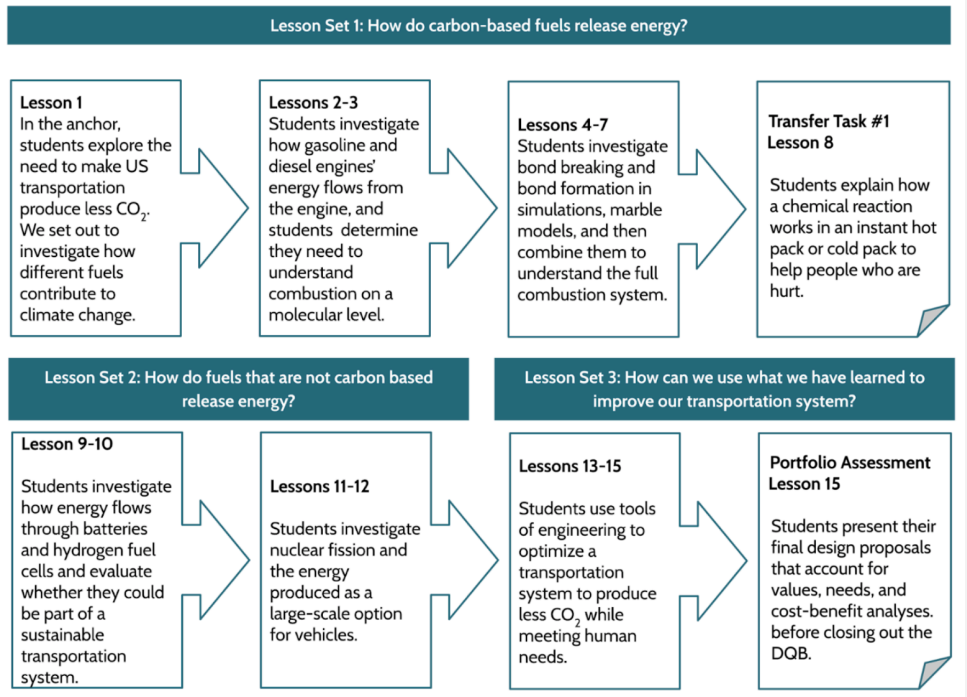
C.5 Energy from Chemical & Nuclear Processes

Unit Structure



Before Teaching the Unit

Watch the unit webinar.

Read the unit storyline.

Join the Facebook Group for the course.

Review the Assessment System Overview in the Unit Overview to complete the Grading Planning Tool for the unit.

Review the Unit Overview, Material List and Lesson Teacher Edition to check for the required materials and supplies necessary for the unit. Take note of these unit-specific items related to materials:

- Depending on your background, it may be helpful to consult the Unit Overview materials for a refresher on the importance of electric fields, and energy transfer in and out of fields, in explaining chemical phenomena. In this unit, students will also use fields to explain the massive release of energy in nuclear fission, a model which is accurate but not traditionally taught.
- If this unit was not preceded by others that support students in developing mechanistic understandings of chemical reactions or energy transfer in and out of fields (summarized in the M-E-F poster students build throughout the OpenSciEd Chemistry course), you may need to provide supplementary instruction.
- Lessons 1 and 14 include cards that may require extra preparation on first implementation.

- Lesson 2 includes a series of demonstrations that are relatively straightforward individually, but consult L2 Demonstrations Summary for an overview of how these models are used in discussion.
- Special attention will be required in the first implementation to set up for Lessons 3 and 9, which use lab materials (marble-ruler models and voltmeters, respectively) which may require extra time for initial preparation.
- The Lesson 6-8 sequence does important work to help students solidify the idea that exothermic and endothermic reactions can be explained by energy transfer in and out of fields and can be quantitatively predicted through the use of bond energies. Make sure to help students solidify their field thinking in this stretch, as the same ideas will be used to explain other phenomena in Lesson Set 2.

While Teaching the Unit

- Watch teacher set-up videos for investigations.
- Keeping a running record of class discoveries and investigations throughout the unit to help absent students catch up and as a reference for future years. Approaches could include a teacher version of a student notebook, or a running shared Google document.
- Organize handouts and digital materials as you go for future use.

After Teaching the Unit

- Carefully store cards and models for future use.
- Consider retaining student project work for exemplars and to inform future instruction.
- Make notes of future revisions, modifications.
- Take pictures of posters, consensus models and exemplary student work.
- Survey students at end of unit for feedback and self-reflection.

Unit Fast Facts for Planning

Unit Length	15 Lessons, 31 Days
Lessons with Hands-On Investigations	2, 4, 7, 8, 9
Lessons Requiring Student Devices	2, 3, 4, 5, 6, 10, 11, 14
Lessons that Require In-Advance Material Preparation	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 14 Color copies: 10
Lessons with Mid-Point or Summative Assessment Moments	5, 8, 11, 15