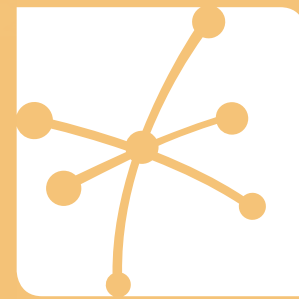


ENERGY



Making Sense of
SCIENCE

FORMAT

5-day face-to-face professional learning courses.

AUDIENCE

Teachers of science in grades 6–8

SEQUENCING

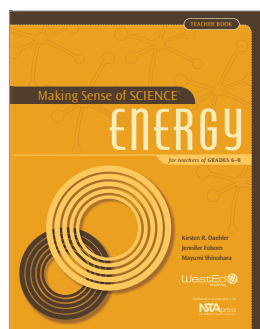
All the 5-day courses are complementary and they can be taken in any order.

RELATED MATERIALS

The *Making Sense of Student Work* protocol is available for teachers to use with their school-based professional learning communities as follow-up to the 5-day courses.

Implementing NGSS?

An optional next generation science toolkit is available that supports teaching toward the Next Generation Science Standards (NGSS). It provides a framework for exploring core properties of next generation science including the use of phenomena-based instruction and the equitable engagement of all students in multidimensional science learning. It also takes a dive deep into the NGSS Science and Engineering Practices (SEPs) and the Crosscutting Concepts (CCCs).



Every interaction involves energy, but defining what energy is no simple task. In this course, participants work to make sense of energy in a variety of contexts, explore the relationship between matter and energy, and investigate ways that energy transfers. The science learning begins with participants taking a closer look at different kinds of energy. The next series of mathematics-rich investigations have participants

compare energy to forces, explore different units for measuring energy, and conduction as a mechanism of energy transfer. Participants then use a systems lens to think about how energy is conserved in an interaction. The science learning concludes with an exploration of energy in ecosystems. Participants use food web, matter web, and energy tree diagram models to track what happens with matter and energy in ecosystems.

Throughout the course, participants are charged with writing their ideas down and working to communicate their thinking through a series of written explanations. These Literacy Investigations provide participants with an opportunity to be metacognitive about their writing process — they work to define what writing is and the role it serves in our lives, examine the characteristics of science writing (as it compares to other types of writing), consider tools that support writing, and explore a framework for supporting writing in their own classroom.

The Teaching Investigations in this course provide participants with the opportunity further connect to the classroom. Through analysis of teaching cases, participants get a glimpse into other teachers' classrooms, unpack the value of different instructional moves and strategies, examine learning gaps in student understanding, and explore the tradeoffs of different models and instructional approaches for teaching about the abstract concept of energy.