

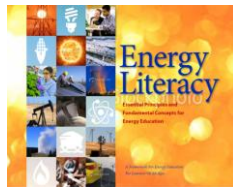
## Energy 101 presents the scientific, technological, and societal roles energy plays in our lives.

The Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy's (EERE) peer reviewed Energy 101 Course Framework is for use by energy experts and educators at universities and community colleges to create introductory, multidisciplinary fundamentals of energy type courses that:

- ✓ Are grounded in the *Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education* document.
- ✓ Are adaptable to meet the specific needs of diverse higher education institutions and their student populations.
- ✓ Provide students with an understanding of the relevant scientific, technological, and social-political aspects of the energy system.
- ✓ Provide a framework for understanding implications of energy decision-making and increase energy literacy.
- ✓ Aim to increase pathways available to students for energy-related degrees and energy careers.

## Energy Literacy and Department of Energy

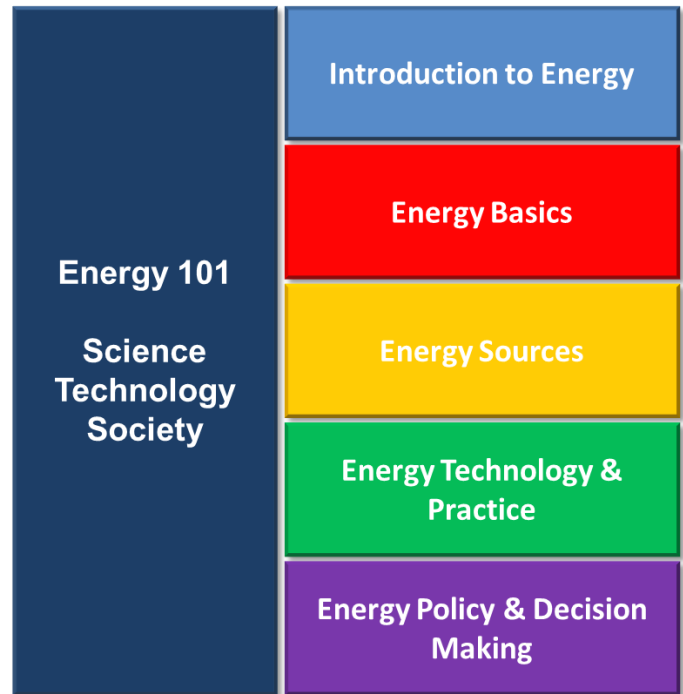
Energy literacy is an understanding of the nature and role of energy in the universe and in our lives. Energy literacy is also the ability to apply this understanding to answer questions and solve problems.



An energy-literate person:

- Can trace energy flows and think in terms of energy systems.
- Knows how much energy they use, for what, & where the energy comes from.
- Can assess the credibility of information about energy.
- Can communicate about energy and energy use in meaningful ways.
- Is able to make informed energy and energy use decisions based on an understanding of impacts and consequences.

## Energy 101 Course Framework



## Why Energy 101?

Energy is a multidisciplinary subject touching each of our daily lives and yet its governing concepts of study remain abstract to most. Together with the Energy Literacy Initiative, Energy 101 seeks to provide a framework to build university level courses that teach the fundamental and multidisciplinary aspects of energy.

The Energy 101 Course Framework builds upon the DOE's lead and peer reviewed Energy Literacy document; *Essential Principles and Fundamental Concepts for Energy Education*. This United States Global Change Research Program endorsed publication highlights seven energy essential principles that, if understood and applied, will help individuals and communities make informed energy decisions.

## Energy 101 Online Resources:

### Energy 101 Community Forum

[Nterlearning.org/forum/energy101](http://Nterlearning.org/forum/energy101)

### Energy 101 Website

[eere.energy.gov/education/energy\\_101.html](http://eere.energy.gov/education/energy_101.html)

### Energy Literacy Initiative

[eere.energy.gov/education/energy\\_literacy.html](http://eere.energy.gov/education/energy_literacy.html)

## U1. Introduction to Energy

ELP1. Energy is a physical quality that follows precise natural laws. (Core 1.1)

ELP2. Physical processes on Earth are the result of energy flow through Earth's system. (Core 2.6)

ELP3. Biological processes depend on energy flow through the Earth's system. (Core 3.6)

## U2. Energy Basics

ELP1. Energy is a physical quality that follows precise natural laws. (Cores 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8)

## U3. Energy Sources

ELP2. Physical processes on Earth are the result of energy flow through Earth system. (Core 2.2)

ELP4. Various sources of energy can be used to power human activities, and often this energy must be transferred from source to destination. (Cores 4.1, 4.3, 4.5, 4.7)

ELP6. The amount of energy used by human society depends on many factors. (Core 6.1)

ELP7. Quality of life of individuals and societies is affected by energy choices. (Core 7.3)

## U4. Energy Technology & Practice

ELP4. Various sources of energy can be used to power human activities, often this energy must be transferred from source to destination. (Cores 4.2, 4.3, 4.4, 4.5, 4.6, 4.7)

## U5. Energy Policy & Decision Making

ELP5. Energy decisions are influenced by economic, political, environmental, and social factors. (Cores 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7)

ELP6. The amount of energy used by human society depends on many factors. (Cores 6.3, 6.4, 6.5, 6.6, 6.8)

ELP7. Quality of life of individuals and societies is affected by energy choices. (Core 7.1)

## The Energy 101 Course Framework

Using the Energy Literacy fundamentals as a starting point, the framework was the result of analysis of existing college-level energy courses, public comment and expert peer review. The Energy 101 course framework also seeks to lower the threshold to course creation by leveraging the DOE's National Training and Education Resource (NTER), an open-source, online platform for the creation, and delivery of energy education and workforce related content utilizing the latest in advanced internet and learning technologies.

**Breaking Down the Framework:** The peer reviewed Energy 101 course outline (to the left) consists of five units (U1-5). Each of the units covers one or more of the seven Energy Literacy Principles (ELP1-7) and the 49 associated core concepts (1.1, 1.2 and so on) in a different combination, with purposeful redundancy between the principles, and concepts, following the multidisciplinary nature of energy. The result is a semester long course framework consisting of 5 units and 36 core concepts that support each of the Units focuses. The use of this peer reviewed framework helps to establish the common concepts and principles that every fundamental "Energy 101" course should have, while leveraging the modular design of the Energy Literacy Principles document, allowing the unpacking of energy principles and concepts in a manner to be customized for the needs of the learner audience.

### Energy 101 Project Team:

The Energy 101 project is funded primarily by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy and is managed by the Association of Public and Land-grant Universities and the Oak Ridge Association of Universities. The Environmental and Energy Study Institute is providing outreach, peer-review, and content development.

### Additional Resources:

**National Training and Education Resource**  
[NTERLearning.org](http://NTERLearning.org)

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