



# PHY 194: Energy Matters

## Overview

Physics underlies many of the basic functions of heating, lighting, transportation, even cooking! Understanding basic physics will help you with using energy wisely, making decisions about what appliances to buy and why, how to best cool your home, etc. In this course you'll be using and developing skills in critical thinking, analysis, estimating and evaluating data. Specifically, by the end of this course you will know what energy is, how it is used, transmitted, and stored, how to estimate how much you are using, and how to estimate how long various energy sources will last. You will also understand the role that basic physics plays in constraining possible solutions to energy sustainability moving forward and how it (and a diverse and inclusive physics community) is part of the complex problem of addressing the global challenges we face.

## What You'll Learn

- Examine why understanding the laws of physics matters in the global energy conversation. Identify different types of energy. Explain how energy transforms from one type to another. Explain how we store it and transmit it.
- Examine how the energy available limits the work that can be done (in a physics sense). Learn that a fundamental law of physics prevents the creation of energy from nothing.
- Explain how we can use energy to do useful work, but we always end up producing heat and how this is due to the reality of the world we live in as expressed as a fundamental law of physics. Explain why we cannot make machines that are perfectly efficient and why extracting heat from one location adds additional heat to another.

## How to Succeed

To be successful in this course, we recommend English language fluency and computer literacy. We also encourage you to make sure your laptop or desktop computer meets the [technical requirements](#).

The math needed for this course is algebra, powers and exponentials; and you will learn how to use exponentials and logarithms.

**MAT 117 College Algebra is strongly suggested as a prerequisite for success in this course.**

## Earn College Credit

This course appears on your transcript identically to how it appears on the transcript of an enrolled ASU student.

This course includes a lab and satisfies 4 credit hours toward the Natural Science - Quantitative (SQ) General Studies requirements at Arizona State University. It is strongly encouraged that you consult with your institution of choice to determine how these credits will be applied.

In order to receive academic credit for this course, you must earn a grade of "C" or better. You have one year to add the course to your transcript.

## Exams and Grading

**35%**

Participation

**21%**

Learning Activities

**14%**

Homework & Quizzes

**30%**

Capstone Project

# PHY 194: Continued

## Time Commitment

This is an asynchronous, online course. This means, while you will have deadlines, you do not need to be at your computer at specific times or participate in live activities.

To be successful in this class, you must view all course pages and complete all graded work by the deadlines indicated. Also, keep in mind that "attendance" in an online course means logging into the platform on a regular basis, checking for course announcements, and visiting and participating in the discussion forums.

This 4 credit, 16 week course requires about 180 hours of work. Therefore, expect to spend approximately 12-15 hours per week preparing for and engaging in this course.

## Materials

This course makes use of open educational resources (OERs) provided within the course, **no purchase necessary**.

## Graded Assignments

Graded assignments are required and count towards your final grade. Students must submit all assignments via the course site unless otherwise instructed.

## Assignment Deadlines

Your instructional team will provide all content and learning activities on or through your course site. It is your responsibility to review all content, fulfill all assignments on time, and ask any questions you have in the designated discussion area. It is also your responsibility to determine the due dates and times for all course assignments according to your time zone. Due to the large-scale format of Universal Learner Courses, late assignments will not be accepted at any point during the course, and we cannot make exceptions.

## Course Communication

All communication will take place via the discussion forums and course announcement page. There will be a discussion forum where you can post general questions, comments, and direct inquiries for the instructor and course team. Please use these forums to ensure a timely response. Your instructor will not be able to respond to email.

## Additional Information

If you have questions about Universal Learner Courses and how they work, please visit [ea.asu.edu](http://ea.asu.edu) or contact our support team at [ulcourses@asu.edu](mailto:ulcourses@asu.edu).