

UW in Florence

Spring 2017

Course Descriptions

Energy and the Earth: The Global Perspective

UW Equivalent: Geoscience 411 – Energy Resources

Instructor: Alan Carroll, UW Professor, Dept. of Geoscience

Prior courses in geoscience are not required, so majors and non-majors are encouraged to take this course.

Energy use and its consequences (including climate change) motivate some of the most contentious and complex public debates of our time. Although these issues are often cast in terms of renewable versus nonrenewable energy, in reality both depend on finite geological resources. The evolution of the Earth itself therefore offers a uniquely illuminating perspective from which to evaluate alternative pathways toward energy and environmental sustainability.

This course will examine the full spectrum of renewable and nonrenewable energy systems, using geology as an organizing theme. Special emphasis will be placed on how historical patterns of energy use and the availability of energy resources vary across the globe. The northern Apennine Mountains also provide a unique opportunity to illustrate key geological principles related to energy resource development, based on field examination of local outcrops.

At the conclusion of this course students will be able to:

1. Explain the basic origins of both renewable and non-renewable energy resources.
2. Describe how changing technology impacts energy resource use.
3. Summarize the negative consequences of energy use (both renewable and nonrenewable), and describe some ways in which these consequences might be mitigated.
4. Discuss how energy use has changed over the past two centuries, and how it is likely to change in the future.
5. Describe how patterns of energy use and natural resource availability in the U.S. compare to those in other parts of the world.

Principles of Engineering from the Renaissance to Modern Times

UW Equivalents: Study Abroad 130 – Topics in Physical Science; Physics 199 – Directed Study

Instructor: Wendy Crone, UW Professor, Dept. of Engineering Physics

Prior courses in engineering are not required, so majors and non-majors are encouraged to take this course. No calculus required. If engineering technical elective credit is desired, contact instructor.

This course will explore engineering achievements of the Italian Renaissance period and their relation to modern engineering practice. We will focus on several revolutionary engineering advancements of the Renaissance, exploring the key principles developed, as well as the errors in understanding of that time.

We will discuss the innovative work of notable Italian figures such as Galileo Galilei, Leonardo da Vinci, and Filippo Brunelleschi, whose contributions to science and engineering are timeless. The fundamental mechanics principles developed by these early figures (for example: scale, tension, bending, friction, and projectile motion) will be traced through modern engineering practice and we will discuss current engineering applications related to these historic advancements.

In addition to seeing the results of their work through museum visits and tours of historical architectural sites in Florence, we will replicate experiments – loaded beams and falling bodies – and building techniques of their time in a hands-on component of the course.