

GEOL 321/521

GEOLOGY OF ENERGY RESOURCES

Fall 2019

Survey of non-renewable and renewable energy resources. Topics include petroleum, natural gas, coal, nuclear, geothermal, solar, wind, hydro and biofuel energy. Course discusses global production, usage, impacts and future prospects of these resources, and data capture, analysis and modeling. (3 credits).

Instructor: Linda Hinnov, Dept. AOES, office: 3457 Exploratory Hall; email: lhinnov@gmu.edu

Meetings: Tuesdays, 16.30-19.15, Exploratory 1005.

Materials: Online resources, review and research articles; see course *Blackboard* website.

Requirements:

- All students: Four homework assignments, take-home midterm and final exams.
- Graduate students: a paper on a current problem in energy resources.

Ethics: Consult <https://oai.gmu.edu/mason-honor-code/full-honor-code-document/> for course policy.

Grading: Assignments, exams and papers are individually scaled to 100 points and equally weighted.

DATE	TOPIC	ASSIGNMENT
Week 1: Aug 27	Energy in Society	
Week 2: Sep 03	Petroleum	Hand out HW1
Week 3: Sep 10	Natural Gas	
Week 4: Sep 17	Coal	
Week X: Sep 24	NO CLASS (GSA Annual Conference)	
Week 5: Oct 01	Nuclear Energy	Hand in HW1; hand out HW2
Week 6: Oct 08	Limited Resource Modeling	
Week X: Oct 15	NO CLASS; TAKE-HOME MIDTERM EXAM	
Week 7: Oct 22	Disasters	
Week 8: Oct 29	Geothermal Energy	
Week 9: Nov 05	Wind Energy	Hand in HW2; hand out HW3
Week 10: Nov 12	Solar Energy	
Week 11: Nov 19	Hydro Energy	
Week 12: Nov 26	Biofuels	
Week 13: Dec 03	Energy and Climate Change	Hand in HW3; hand out HW4
TBA:	TAKE-HOME FINAL EXAM	

Learning objectives:

Knowledge and Understanding

- Gain knowledge about energy, energy resources and their geological origins
- Gain knowledge about global production, delivery and consumption of energy resources
- Understand the advantages, disadvantages, and limitations of non-renewable and renewable resources
- Understand the intersection of energy and the environment

Analytical Skills and Abilities

- Develop the ability to access reliable information about energy resources.
- Develop skills for solving quantitative problems about energy resources.

Professional Development

- Communicate effectively about the geological sources, distribution, size, and intensity of energy resources.
- Be informed on the energy mix portfolios of major world nations.
- Advise public and private-interest groups on issues relating to energy resources.