

GPHY 319: Contemporary Energy Resources

Course Instructor	Warren Mabee	Email: warren.mabee@queensu.ca
Office	Mac-Corry E331	
Contact Time	In-person lectures, 2x week Office hours, 1x week	
Format	Lectures and assignments	
Class Assessment	Paper review	20%
	Mid-Term Exam	25%
	Group assignment	25%
	Final Exam	30%

COURSE OVERVIEW

This course will focus on energy systems in the modern context, reviewing how energy is sourced, harnessed, distributed, and used in today's society, and how potential sustainable energy transitions might proceed. Students will review basic energy concepts; explore fossil fuel, nuclear, and renewable energy sources; consider the technologies available to harness and utilize energy; and develop an understanding of energy demand for heat, transport, and electricity. Canada will be the primary focus of the course, but global resources and the scales of energy transitions and their geographies will be discussed. Students taking this class will gain an understanding of the roles of renewable and non-renewable energy sources in Canada's current and future energy mix, and the policies that are guiding energy transitions.

LEARNING OUTCOMES

To complete this course, students will demonstrate their ability to:

1. Critically review academic and industry literature related to energy supply and demand.
2. Describe the function of different energy generation options, in terms of technological readiness and end-use fit.
3. Explain the benefits and disadvantages, both quantitative and qualitative, that different energy resources present.
4. Present complex concepts in written format.
5. Work independently to complete assignments.

COURSE TOPICS

1. What is energy? Basic concepts and terminology
2. How do we use energy currently? Transport, Heat, and Electricity
3. Fossil fuel resources (coal, oil, natural gas)
4. Renewable energy resources (hydro, wind, solar, geothermal, biomass, ocean)
5. Nuclear energy
6. Impacts of energy development—political, sociocultural, environmental, and economic
7. How can we use energy sustainably?
8. Energy transition pathways: local, regional, global

COURSE READINGS

No course textbook. Average of 1-2 papers will be suggested per week, depending on length and topic. Key readings include:

- Calvert, K. (2016). From 'energy geography' to 'energy geographies': Perspectives on a fertile academic borderland. *Progress in Human Geography*, 40(1), 105–125. <https://doi.org/10.1177/0309132514566343>
- Healy, N., Stephens, J. C., & Malin, S. A. (2019). Embodied energy injustices: Unveiling and politicizing the transboundary harms of fossil fuel extractivism and fossil fuel supply chains. *Energy Research & Social Science*, 48, 219–234. <https://doi.org/10.1016/j.erss.2018.09.016>