

MIE1120H: Current Energy Infrastructure and Resources

Winter 2021

Instructor:

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Teaching Assistants:

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Lectures:

Thursdays: TBC - 12:10-15:00 in RS208, starting January 9

Course Description:

This course covers the basic principles of how global energy is currently supplied, by primary source. The aim is to provide an energy literacy that can inform research, technology development and effective policy in this area. The course content will be roughly divided according to the current global energy mix (i.e. 34% oil, 28% coal, 23% gas, 7% hydro, 4% Nuclear, 4% Other - including Solar, Wind and Geothermal). In each case background reading and critical analyses will be applied to: (a) the characteristics of the resource; (b) the infrastructure for extraction/development of the resource; (c) the usage of the resulting energy; and (d) the implications of usage. Assignments and exams will assess both background knowledge and the ability to apply fluid flow, thermodynamic and heat transfer analyses to energy supply systems.

Evaluation:

Assignment 1:	15%
Midterm:	30%
Assignment 2:	15%
Exam:	40%

Resources:

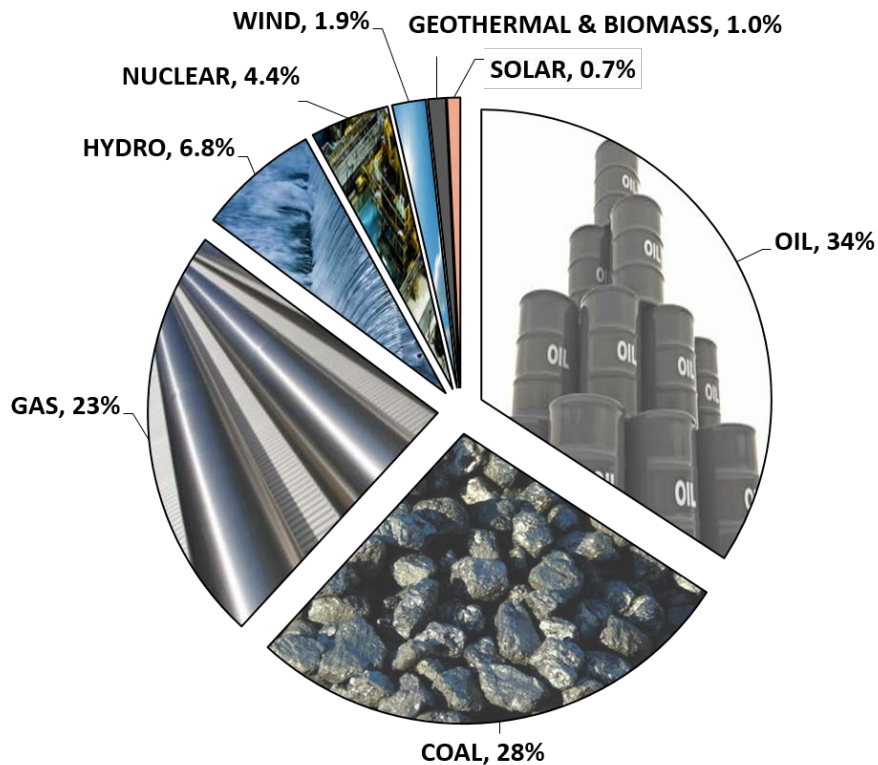
Will be updated week by week, including texts as well as research papers, videos, and topical news articles. Below is an initial list of quality resources available online.

- TBC BP – [Statistical Review of World Energy 2018](#)
- IEA – [Data and statistics](#)
- MacKay, D.J.C., “Sustainable Energy Without the Hot Air”, Cambridge 2008. Also available free online: www.withouthotair.com 10-page synopsis:
<http://www.withouthotair.com/synopsis10.pdf>

To be updated: Preliminary Schedule of Topics:

12:10 Thurs	Jan 9	Introduction	RS208	
12:10 Thurs	Jan 16	Geothermal, Solar, Wind	RS208	
12:10 Thurs	Jan 23	Nuclear, Hydro	RS208	
12:10 Thurs	Jan 30	Nuclear Industry Talk	RS208	Assignment 1 distributed in class
12:10 Thurs	Feb 6	Natural Gas	RS208	
12:10 Thurs	Feb 13	Coal a+b	RS208	Assignment 1 due at <i>start</i> of class
----- <i>Reading Week</i> -----				
12:10 Thurs	Feb 27	MIDTERM	TBD	
12:10 Thurs	Mar 5	Coal c+d	RS208	
12:10 Thurs	Mar 12	Oil a+b	RS208	Assignment 2 distributed in class
12:10 Thurs	Mar 19	Oil c+d	RS208	
12:10 Thurs	Mar 26	Oil Industry Talk	RS208	Assignment 2 due at <i>start</i> of class
12:10 Thurs	Apr 2	Review	RS208	
12:10 Thurs	Apr 9	EXAM	TBD	

World Energy Consumption:



Inclusivity Statement:

All students and faculty at the University of Toronto have a right to learn, work and create in a welcoming, respectful, inclusive and safe environment. In this class we are all responsible for our language, action and interactions. Discriminatory comments or actions of any kind will not be permitted. This includes but is not limited to acts of racism, sexism, Islamophobia, anti-Semitism, homophobia, transphobia, and ableism. As a class we will work together to create an inclusive learning environment and support each other's learning.

If you experience or witness any form of discrimination, please reach out to the Engineering Equity Diversity & Inclusion Action Group [online](#), an [academic advisor](#), a [U of T Equity Office](#), or any U of T Engineering faculty or staff member that you feel comfortable approaching.

Accommodations:

If you have a learning need requiring an accommodation the University of Toronto recommends that students immediately register at Accessibility Services at www.studentlife.utoronto.ca/as.

Location: 4th floor of 455 Spadina Avenue, Suite 400

Voice: 416-978-8060

Fax: 416-978-5729

Email: accessibility.services@utoronto.ca

The University of Toronto supports accommodations of students with special learning needs, which may be associated with learning disabilities, mobility impairments, functional/fine motor disabilities, acquired brain injuries, blindness and low vision, chronic health conditions, addictions, deafness and hearing loss, psychiatric disabilities, communication disorders and/or temporary disabilities, such as fractures and severe sprains, recovery from an operation, serious infections or pregnancy complications.

Mental Health:

As a university student, you may experience a range of health and/or mental health issues that may result in significant barriers to achieving your personal and academic goals. The University of Toronto offers a wide range of free and confidential services and programs that may be able to assist you. We encourage you to seek out these resources early and often.

Health & Wellness Resources: undergrad.engineering.utoronto.ca/advising-and-wellness/health-wellness/

U of T Health & Wellness Website: studentlife.utoronto.ca/hwc

If, at some point during the year, you find yourself feeling distressed and in need of more immediate support, visit the **Feeling Distressed Webpage**: www.studentlife.utoronto.ca/feeling-distressed, for more campus resources.

Off campus, immediate help is available 24/7 through **Good2Talk**, a post-secondary student helpline at 1-866-925-5454.

All students in the Faculty of Engineering have an Academic Advisor who can advise on academic and personal matters. You can find your department's Academic Advisor here: uoft.me/engadvising