

MIE1120H: Current Energy Infrastructure and Resources

Winter 2020

Instructor:

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Lectures:

Wednesday: 12:10-15:00 (RS211), starting January 8

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 divided strictly according to the current global energy mix (i.e. 34% oil, 28% coal, 23% gas, 7% hydro, 4% Nuclear, 4% Other). 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 for 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.

- BP – Statistical Review of World Energy June 2017 ([Video overview, report and excel worksheet](#))
- IEA - Key World Energy Statistics 2017 ([REPORT](#))
- 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>

Schedule (Subject to change):

12:10 Wed	Jan 8	Lecture 1	RS211	
12:10 Wed	Jan 15	Lecture 2	RS211	
12:10 Wed	Jan 22	Lecture 3	RS211	
12:10 Wed	Jan 29	Lecture 4	RS211	Assignment 1 distributed in class
12:10 Wed	Feb 5	Lecture 5	RS211	
12:10 Wed	Feb 12	Lecture 6	RS211	Assignment 1 is due <i>before 12:00 Noon</i>
----- Reading Week -----				
12:10 Wed	Feb 26	MIDTERM	TBD	
12:10 Wed	Mar 4	Lecture 7	RS211	
12:10 Wed	Mar 11	Lecture 8	RS211	
12:10 Wed	Mar 18	Lecture 9	RS211	Assignment 2 distributed in class
12:10 Wed	Mar 25	Lecture 10	RS211	
12:10 Wed	Apr 1	Lecture 11	RS211	Assignment 2 is due <i>before 12:00 Noon</i>
12:10 Wed	Apr 8	EXAM	TBD	

Visual schedule with global energy mix:

