Course Description and Objectives

Description: The course is an overview of topics that affect decisions about energy supply and technology options, placing sustainable and renewable energy sources and technologies within the larger context of policy choices that must be made at the societal and political levels. The goal is to provide the technical data and analytic tools that will enable engineers to help shape practical energy policies. Major topics include (i) an inventory of the supply and demand and technologies for all energy forms, including fossil fuels, nuclear, and renewable forms (ii) economic and analytic tools supporting decision-making about energy options, and (iii) analysis of existing options and policies.

Hours per week (lectures/lab/PA): 3 lecture hours per week.

Marking Scheme: midterm 15%
                  project 35%
                  final exam 50%

Project: The project consists of an energy policy analysis for a specific jurisdiction (country, province/state, or city). The report must include (i) an analysis of the technical facts and relevant data (current and projected supply and demand by energy type, factors affecting ability to procure supplies, etc.), (ii) an examination of existing policies covering aspects such as risk and environmental and economic impacts, and (iii) recommended future policies, with supporting documentation.

Personnel

Professor: J.W. Chinneck
            office: ME4436
            tel: ext. 5733
            email: chinneck@sce.carleton.ca
            Office hours: to be announced.

Regulations

Prerequisites: Fourth-year status in Engineering.

Preclusions: none

Final Exam: The final exam is for evaluation purposes only and will not be returned to the student. Students who miss the final exam may be granted permission to write a deferred examination (see the Undergraduate Calendar for regulations on deferred exams). These students have additional months to study and a less crowded examination schedule compared to their colleagues who write the final exam as scheduled. As such, it is only fair to expect substantially better performance from these students on the deferred examination than on the scheduled final exam.
Carleton University
Department of Systems and Computer Engineering
SREE 4002  The Energy Economy, Reliability and Risk  Winter 2018

Course Outline

**Plagiarism** (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.

**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**Health and Safety Information:** Here is the link to the health and safety manual: [www.sce.carleton.ca/courses/health-and-safety.pdf](http://www.sce.carleton.ca/courses/health-and-safety.pdf)

**Resources**

**Textbook and Sources:** There is no required textbook for the course. We will make use of a variety of information sources, many freely available online. Some of the more important documents include:


Other useful readings include:


**Course Web page:** A cuLearn page is maintained for the course. Check it regularly.

**Getting help:** Get help early if you are having difficulty. Here are ways to get help:

- Ask questions in class. It’s best to clear things up right at the start.
Ask the professor during office hours. Email to set up an appointment if the office hours won’t work for you.

Email is not a suitable medium for technical questions. Questions submitted this way will be answered at the beginning of the next class.

Approximate Schedule

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<tr>
<th>Week of:</th>
<th>Topics:</th>
<th>Project/midterm:</th>
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<tbody>
<tr>
<td>08-Jan</td>
<td>Introduction to the course.</td>
<td>form groups</td>
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<tr>
<td>15-Jan</td>
<td>The climate change problem. Fossil fuels: supply and demand</td>
<td>proposal due</td>
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<tr>
<td>22-Jan</td>
<td>Fossil fuels: supply and demand. Nuclear, hydro, biomass, geothermal energy: supply and demand.</td>
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<tr>
<td>29-Jan</td>
<td>Solar (all forms): supply and demand</td>
<td>project intro</td>
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<td>05-Jan</td>
<td>Economics and analytic tools</td>
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<td>12-Feb</td>
<td>Risk analysis</td>
<td>outline pres.</td>
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<tr>
<td><strong>19-Feb</strong></td>
<td><strong>BREAK WEEK: no classes</strong></td>
<td></td>
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<tr>
<td>26-Feb</td>
<td>Security, reliability, health, environmental risks and impacts.</td>
<td>midterm</td>
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<td>05-Mar</td>
<td>Nuclear energy impacts.</td>
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<tr>
<td>12-Mar</td>
<td>Comparison of energy forms. Conservation as a policy.</td>
<td>progress pres.</td>
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<td>02-Apr</td>
<td>Final presentations</td>
<td>final presentations</td>
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<tr>
<td>09-Apr</td>
<td>Conclusions.</td>
<td>final reports due</td>
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