

COURSE OUTLINE - 2016

COURSE: GGR 347F: EFFICIENT USE OF ENERGY
INSTRUCTOR: Danny Harvey
SS 5032, Telephone: 978-1588; email: harvey@geog.utoronto.ca
LOCATION: SS 1074
TIME Wed 5-7, occasional tutorials after class (7:10 until 8:00) (same location) (see schedule on reverse)
OFFICE HOURS: MF11-1, W11-5 or by appointment

Outline

The course examines the options available for dramatically reducing our use of primary energy with no reduction in meaningful energy services, through more efficient use of energy at the scale of energy-using devices and of entire energy systems. Topics covered include: energy use in buildings, transportation, industry and agriculture. Each topic will cover (i) the underlying physical principles that determine the potential of and the limits to energy efficiency improvements, (ii) the difference in potential savings when focusing on individual energy using devices rather than entire energy-using systems, (iii) examples of efficiency improvements that have been achieved in practice in various countries around the world, and (iv) the cost and financing of energy efficiency improvements. As well, the role of the so-called rebound effect in eroding the energy-saving benefit of efficiency improvements will be discussed.

Text

The course text is my own book, *Energy and the New Reality, Volume 1: Energy Efficiency and the Demand for Energy Services* (Earthscan, March 2010), and is available in the university bookstore. Powerpoint files for each chapter are available on my website (<http://faculty.geog.utoronto.ca/Harvey/Harvey/publications.htm#pub>) (only the chapters indicated in the outline are needed. These files are a good starting point for studying the course material but will need to be supplemented with notes from the textbook.

Requirements

There will be one minor and two major computational assignments. The assignments will involve using Excel spreadsheets. The assignments will be worth 50% of the final mark in total.

There will be one mid-term test and a 2-hour exam (with the exam covering only the second half of the term work). The term test and exam will each be worth 25% of the final mark.

Penalty for late work:

5% per weekday. No marks will be given after an assignment is taken up in class, which is usually one week after it is due, so plan your work carefully.

If you miss the term test: Notify me **within 24 hours** and present medical documentation. Only cases of severe illness or other extreme situations will be accepted.

Pre-requisite: Some first-year math and/or physics will be very helpful. *Ontario Grade 11 Physics (or the equivalent from elsewhere) is an absolute minimum pre-requisite.*

Exclusion: GGR 333

**GGR 347F – Efficient Use of Energy
OUTLINE OF LECTURES**

Week Number	Topic (and chapter from textbook)	Fall 2016 Date
1	Introduction (Chapters 1 and 2)	14 Sept
2	Transportation (Chapter 5)	21 Sept
3	Transportation	28 Sept
4	Industry (Chapter 6, optional reading)	5 Oct
5	Agriculture (Chapter 7)	12 Oct
6	Buildings (Chapter 4)	19 Oct
7	Term Test (Covers weeks 1-5)	26 Oct
8	Buildings	2 Nov
9	Buildings	9 Nov
10	Buildings	16 Nov
11	Buildings	23 Nov
12	Synthesis and Policy (Chapters 10 & 11)	30 Nov

GGR 347F - PROBLEM SETS

PS #	Topic	Assigned	Due	Taken Up	Contribution to final mark
1	Units and energy	14 Sept	28 Sept, in class	5 Oct	5%
2	Transportation	21 Sept	12 Oct, in class	19 Oct	20%
3	Buildings	2 Nov	23 Nov, in class	30 Nov	25%

GGR 347F – DATES OF WEDNESDAY TUTORIALS AFTER CLASS

Date	Activity
21 Sept	Hand out and explain first part of PS#2
28 Sept	Explain second part of PS#2, respond to questions
19 Oct	Take up PS#2
2 Nov	Take up term test, Hand out PS#3, explain first part (might go past 8:00)
9 Nov	Explain second part of PS#3
30 Nov	Take up PS#3