

# Syllabus: GGR1407, Efficient Use of Energy

Mon 5-7, tutorials some weeks Mon 7-8

Synchronous Online and Recorded

Instructor: Professor Danny Harvey

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## Office Hours:

Office hours will be available through Bb Collaborate. This will permit students to share the Excel files that they will be working on with the instructor. A schedule of office hours is given in the Syllabus on the course Quercus page, along with instructions on how to use Bb Collaborate.

## Course Description

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 are: energy use in buildings, transportation, industry and agriculture. Most topics 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.

## Learning Outcomes

Competence in using Excel to be able to carry out approximate calculations related to energy use

Developing the habit of, and approaches for, analyzing the results of calculations in order to understand why they gave results that they did

Understanding of the basic physics behind achieving factors of 2-10 reduction in energy use, of the potential of energy efficiency, and of the major complicating factors and other considerations that need to be taken into account.

## Course Organization

The course will consist of synchronous online lectures through Blackboard (Bb) Collaborate, which is accessible through Quercus, permitting students to ask questions during the lecture. The lectures will be recorded and made available through Bb Collaborate, so as to permit review later or for students who cannot attend one or more lectures online. The lectures will largely consist of elaboration of fairly detailed powerpoint files, which will also be available on Quercus for separate viewing and review. There will be four Excel-based assignments that will be explained and later taken up through online

tutorials. Assignments will be made available through Quercus, and should be submitted and will be returned with marks and comments through Quercus.

## Assignments and Evaluation

### Assignment 1 – Transportation – Part 1

Assigned Sept 14<sup>th</sup>, due 11:59 PM Sept 25<sup>th</sup>, worth 10%  
Excel-based computations

### Assignment 2 – Transportation – Part 2

Assigned Sept 28<sup>th</sup>, due 11:59 PM Oct 16<sup>th</sup>, worth 12%  
Excel-based computations

### Assignment 3 – Buildings – Part 1

Assigned Nov 2<sup>nd</sup>, due 11:59 PM Nov 20<sup>th</sup>, worth 10%  
Excel-based computations

### Assignment 4 – Buildings – Part 2

Assigned Nov 23<sup>rd</sup>, due 11:59 PM Dec 7<sup>th</sup>, worth 12%  
Excel-based computations

### Assignment 5 – Windows

Assigned Dec 10<sup>th</sup>, due Jan 4<sup>th</sup>, 2021, worth 6%  
Excel-based computations

### Late Penalties

5% per day

## Required Text

pdfs of selected chapter up my own book, *Energy and the New Reality, Volume 1: Energy Efficiency and the Demand for Energy Services* (Earthscan, March 2010), will be available through Quercus

## Course Schedule

### Week 1 – 14 Sept

Introduction

### Week 2 – 21 Sept

Transportation (Chapter 5)

### Week 3 – 28 Sept

Transportation (Chapter 5)

Week 4 – 5 Oct

Industry (Chapter 6, optional reading)

Week 5 – 19 Oct

Industry/Agriculture (Chapter 7)

Week 6 - 26 Oct

Agriculture/Buildings (Chapter 4)

Week 7 - 2 Nov

Term Test (Covers Intro → end of Agriculture)

Week 8 – 16 Nov

Buildings (Chapter 4)

Week 9 – 23 Nov

Buildings (Chapter 4)

Week 10 - 30 Nov

Buildings (Chapter 4)

Week 11 – 7 Dec

Buildings (Chapter 4)

Week 12 – 10 Dec

Buildings/Synthesis and Policy (Chapter 11)

# Graduate Course Policies

## Department of Geography & Planning

### Important Dates

Graduate courses are normally a minimum of 2-3 hours/week for 12 weeks. Reading week is optional for graduate courses. If observed, the instructor will inform the class and provide a make-up date for the missed class.

#### Fall 2020

July 30, 2020	Course enrolment opens
September 8, 2020	F (fall) and Y (fall-winter) session graduate courses and seminars begin
September 11, 2020	Final registration deadline
September 21, 2020	Deadline to add F (fall) and Y (fall-winter) session courses
October 26, 2020	Deadline to drop Fall courses
October-November 2020	Undergraduate reading week*

#### Winter 2020

January 4, 2021	S (winter) session graduate courses and seminars begin
January 13, 2021	Grades for F (fall) courses available for viewing on ACORN
January 18, 2021	Deadline to add S (winter) session courses
February 22, 2021	Deadline to drop S (winter) and Y (fall-winter) session courses
April 16, 2021	Grade deadline for students graduating in June 2021

#### Summer 2021

May 3, 2021	Summer F (May-June) and Y (May-August) session graduate courses and seminars begin
May 19, 2021	Grades for S (winter) and Y (fall-winter) courses available for viewing on ACORN
May 28, 2021	Final date to drop F (May-June) session courses without academic penalty
June 7, 2021	Summer S (July-August) session graduate courses and seminars begin
July 14, 2021	Grades for F (May-June) courses available for viewing on ACORN

\* Reading week applies to undergraduate programs, and is optional for graduate courses, at the discretion of the instructor. If observed, the instructor will inform the class and provide a make-up date for the missed class. This may include an extra class at the end of term. Fall reading week dates: UTSC – October 10-16; UTM – October 13-16; UTSG – November 9-13. Winter reading week dates: UTSC – February 13-19; UTM – February 16-19; UTSG – February 16-19.

### Course Syllabi

A final course syllabus, which includes all assignments, deadlines and weighting of methods of evaluation, must be made available to all students enrolled in the course as early as possible, no later than the deadline for enrolling in classes. Changes to the methods of evaluation or their relative weights cannot be made after this date without the consent of a simple majority of students in the class, provided a vote is announced at the previous class meeting.

## Late Assignments

Instructors are not obligated to accept late work, except where there are legitimate, documented reasons beyond a student's control. In such cases a late penalty is not normally applied. In all other circumstances, if an instructor intends to accept and apply penalties to late assignments this will be clearly set out in the syllabus.

## Attendance and Participation

Although attendance makes up no more than 20% of the final course grade, regular and consistent attendance in graduate courses is expected. Most graduate courses are seminar style classes, which involve collaborative work and in-class discussions with other students and instructors. Students who are unable to attend class each week must inform the instructor as early as possible.

## Accessibility and Accommodations

The University of Toronto is committed to accessibility. If you require accommodations because you are disabled, or have any accessibility concerns about the course, the classroom or course materials, please contact [Accessibility Services](#) as soon as possible.

Where there is an accommodation recommended by Accessibility Services, the department and/or instructors will be provided with an accommodation letter.

## Academic Integrity

Academic misconduct by graduate students is taken very seriously. The University's policy on academic misconduct is found in the Code of Behaviour on Academic Matters (the Code). Students in graduate studies are expected to commit to the highest standards of integrity and to understand the importance of protecting and acknowledging intellectual property. For example, it is assumed that they bring to their graduate studies a clear understanding of how to cite references appropriately, thereby avoiding plagiarism.

Regarding plagiarism, the Code includes the following statements:

*B.i.1. It shall be an offence for a student knowingly:*

*(d) to represent as one's own idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e., to commit plagiarism.*

*Wherever in the Code an offence is described as depending on "knowing," the offence shall likewise be deemed to have been committed if the person ought reasonably to have known.*

Other academic offences include the possession and/or use of unauthorized aids in examinations, submitting the same paper for different courses, forgery (whether of academic records or other documents), concocting facts or references to sources, personating someone, and other forms of cheating and academic dishonesty. Please refer to sections B.i.1. and B.i.3. in the Code for detailed descriptions of offences applicable to students.

The [SGS Academic Integrity Resources](#) webpage outlines the policy on academic misconduct and the process for handling an allegation of academic misconduct.

## Coursework Extensions

The authority to grant an extension to submit coursework beyond the sessional grade deadline is with the department and not the instructor of the course. To request a formal extension, students must submit a Coursework Extension Form, completed by both the student and course instructor, to the relevant graduate department prior to the final grade deadline.

In order to ensure fairness in granting extensions, the department must be reasonably certain that:

- The reasons for delay are serious and substantiated.
- The student is not granted unfair advantage over other students in the course.
- The student has a reasonable chance of completing the outstanding work within the time allotted.
- The normal and satisfactory completion of any new coursework is not in jeopardy.

Extension requests for medical reasons (e.g. short-term illness) must be accompanied by a medical note. Extension requests for students with accommodations due to disability must be supported by documentation from Accessibility Services. Extension requests for other reasons must be detailed in the form or a note to the department.

## Religious Accommodations

Students must alert instructors in a timely fashion to any upcoming religious observances and anticipated absences. Instructors will make every reasonable effort to avoid scheduling tests, exams or other compulsory activities at these times. In the case of an unavoidable conflict with a compulsory activity, every reasonable effort is made to give students the opportunity to make up missed work.

## Course Enrolment and Quercus

Acorn is the only indicator of official course enrolment; Quercus is not. Students enrolled in Acorn will be automatically populated to a course's Quercus site within 24 hours of enrolling. In some cases, if a student is on a course wait list or there is another delay in processing registration an instructor may give a student access to Quercus as a guest. This will not constitute official enrolment and students are responsible for making sure the course is added correctly using Acorn.

## Auditing

Students who wish to audit a course must obtain permission directly from the course instructor within the first week of class. Permission is subject to available space and can only be granted by the course instructor.

Only registered students at the University of Toronto may audit courses. Auditing entitles a student to attend lectures only. Students may not submit any written work, attend labs/tutorials or write tests/exams. The student will not be enrolled in the course and the course will not appear on their transcript. The department does not provide certificates of attendance.

## Reading Courses

Reading courses allow students to complete coursework in topics not covered by current course offerings in Geography or Planning. The [Reading Course Form](#) must be accompanied by a brief course outline.

## Copyright in Instructional Settings

If a student wishes to record (tape, video, photograph, etc.) any lecture presentations or other similar materials provided by the instructor; the instructor's written consent must be obtained beforehand. Otherwise, all such reproduction is infringement of copyright and prohibited. In the case of private use by students with disabilities, the instructor's consent shall not be unreasonably withheld.