

Engineering Economics (Econ 209/Engg 209) (01)

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Lecture Location: Zoom -On-Line Delivery.
Lecture Days/Time: Mon/Wed: 18:00 – 20:45.

Office: ZOOM Delivery
Office Hours: 16:30 – 17:30 (4:30 p.m. to 5:30 p.m.) Summer 2021

Course Description:

This course includes the basic tools and methodology of engineering economic studies. Topics include basic economic concepts, investment decisions, theory of replacement, project evaluation with taxes and depreciation, social decision making and government projects. Examples are drawn from the textbook and various engineering projects.

Course Objectives:

The objective of this course is to prepare future engineers with the necessary tools to evaluate the economic viability of various engineering decisions, such as revenue projects, service projects and replacement analysis. The concept of willingness to pay to measure benefits for a public project is also emphasized.

Course Learning Outcomes:

This course will introduce the engineering student to the discipline of economics and its importance in the field of engineering. The first part of the course looks at the broad definition of economics and an overall view of Canada's economy in comparison to other economic systems. In particular, we look at the important macroeconomic issues such as GDP, inflation and the importance of investment spending and the banking system. Since the interest rate is the firm's financial cost of capital, we explore the role of the Bank of Canada and its relationship with other financial institutions in determining short-term interest rates.

The second (and most comprehensive) part of the course examines the time value of money and how engineers use the time value of money to make important economic decisions. In this section, we examine how interest rates and different compounding periods influence the future value of various capital investments. Future value and present value of annuities, bond and mortgages are also explored. Once we get a solid foundation in this area, we then use these tools to determine the net present value, internal rate of return and payback period of various investment options, which includes depreciation and taxes. Replacement analysis of equipment is also examined. The last part of the course explores the economic evaluation of public projects where the goal is to maximize social welfare instead of profits.

Course Outline:

The following table maps the corresponding chapters from both the Hubbard and Park textbook.

Note: You do not need to purchase the Hubbard text. My notes are sufficient but they follow the Hubbard textbook.

Topic	Hubbard Chapter(s)
Introduction to Micro and Macro Economics	1, 4, and 5
Money and the Monetary System	10
	Park et. al.
Time Value of Money	3 and 4
Understanding Money and It's Management	5 and 6
Depreciation, Taxes and Developing Cash Flows	8, 9, 10 and 14
Replacement Analysis	11
Economic Analysis in the Public Sector	13

Prerequisites/corequisites:

Students must be in the Faculty of Engineering with second year standing or higher. If not registered in the Schulich School of Engineering, consent of the Department of Economics is needed. If required for APEGA, consent must be obtained by the Schulich Undergraduate Studies Office.

Required Textbook(s)

Park, Zuo et al., *Contemporary Engineering Economics (Canadian Perspective)*, Addison-Wesley, 3rd Canadian Edition.

Additional textbooks: (You do not need to purchase this textbook)

Hubbard et al. *Macroeconomics*. Third Canadian Edition. Toronto: Pearson

Online Delivery: This course will be delivered online. Students are expected to be able to participate online in accordance with this Course Outline. Lectures, assignments, office hours, exams, readings and other course material all require online access and this access is the responsibility of the student. I will be sending the students an email before the lecture with instructions on how to log on to the broadcast.

In order to remotely participate in online courses, students will need to have: computer with a current and updated operating system (macOS or Windows will work with all university-supported online learning technologies), a current and updated web browser installed – the latest versions of Firefox, Safari, Chrome or Edge will help to avoid compatibility issues, secure and reliable internet, microphone / headphones, webcam (optional), scanner (or camera to scan your work).

Desire2Learn:

This course will make use of the Desire2Learn (D2L) platform. Students who are registered in the course can log on at <http://d2l.ucalgary.ca> through their student centre. Please note that D2L features a class e-mail list that may be used to distribute course-related information. These e-mails go to your University of Calgary e-mail addresses only.

Tutorials:

The tutorials will be given online. The tutorials will be uploaded at the beginning of the week on D2L. This will give the student the opportunity to attempt the tutorial and then get feedback in a reasonable time.

Grade Determination and Final Examination Details:

Quizzes	20%
Wed. July 7 th (10% on-line quiz)	
Wed. Aug 4 th (10% on-line quiz)	
Midterm Exam	30%
(Wed. July 21 – On-line test)	
Final Examination (date to be announced later by the Registrar's Office. On-line final)	50%
Total	100%

The official grading system will be used. See <http://www.ucalgary.ca/pubs/calendar/current/f-1-1.html>.

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

Quizzes and exams will involve multiple choice questions. However, most of the quiz and exam questions will consist of problem sets. The quizzes and exams will be open book.

If a student's letter grade on the final exam exceeds their midterm(s) letter grade, the weight of the midterm(s) may be transferred to the final exam at the discretion of the instructor. The student must have written the midterm(s) or provided supporting documentation for the absence(s) such as a medical note or statutory declaration.

As per the Writing Across the Curriculum Statement in the Calendar, writing and grading thereof will be a factor in the evaluation of student work. See <https://www.ucalgary.ca/pubs/calendar/current/e-2.html>.

The midterm exam is take-home exam designed and intended to be completed in 60 minutes. The exam(s) will be OPEN book. The exam will be available on D2L. Student will download the exam from D2L, complete the exam, scan it, and submit using Dropbox in D2L. Student will have 50% time extension to complete the exam, at a time of your choosing, within a 24-hour period determined by the instructor.

The final examination will be take-home, comprehensive, and scheduled by the Registrar. Students will download the exam from D2L, complete the exam, scan it, and submit using Dropbox in D2L. Student will have 50% more time to complete the exam, at a time of their choosing, within the 24-hour period that begins 24 hours before the end date of the Registrar's scheduled final exam for this course. The exam is designed and intended to be completed in two hours. The exam will be OPEN book.

All other course components will also be accessed, submitted, and returned through D2L.

If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam <https://www.ucalgary.ca/pubs/calendar/current/g-6.html>. Under no circumstances will this be accommodated by the Department.

THERE WILL BE NO MAKEUP OR DEFERRED QUIZZES/TESTS/EXAMS under any circumstances, nor may the quizzes/tests/exams be written early. Students unable to write the quizzes/tests/exams because of documented illness, family emergency, religious observance, or university-sanctioned event will have the weight shifted to the final examination; otherwise a grade of zero will be assigned.

Reappraisal of Grades

Reappraisal of Grades and Intellectual Honesty:

For Reappraisal of Graded Term Work, see Calendar 1.2

<http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

For Reappraisal of Final Grade, see Calendar 1.3

<http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

ACADEMIC MISCONDUCT

Academic Misconduct refers to student behavior that compromises proper assessment of students' academic activities and includes: cheating; fabrication; falsification; plagiarism; unauthorized assistance; failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

Student committing academic misconduct during the final exam will not receive a passing grade for the course.

For information on the Student Academic Misconduct Policy, Procedure and Academic Integrity, please visit: <https://www.ucalgary.ca/pubs/calendar/current/k-3.html>

Academic Accommodations:

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services. SAS will process the request and issue letters of accommodation to instructors. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at

<https://www.ucalgary.ca/legal-services/university-policies-procedures/accommodation-students-disabilities-procedure>

Freedom of Information and Protection of Privacy (FOIP) Act:

Personal information is collected in accordance with FOIP. Assignments can only be returned to the student and will be accessible only to authorized faculty and staff. For more information, see <https://www.ucalgary.ca/legal-services/access-information-privacy>

Copyright Legislation:

See the University of Calgary policy on Acceptable Use of Material Protected by Copyright at <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy> Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

Course materials created by the instructor (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of

extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

Recording of Lectures:

Recording of lectures is prohibited, except for audio recordings authorized as an accommodation by SAS or an audio recording for individual private study and only with the written permission of the instructor. Any unauthorized electronic or mechanical recording of lectures, their transcription, copying, or distribution, constitutes academic misconduct. See <https://www.ucalgary.ca/pubs/calendar/current/e-6.html>.

Important Dates:

Please check: <http://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>

Student Organizations:

Faculty of Arts Students' Association (F.A.S.A.):

Economics Department Representative

Office: SS 803, E-mail: econrep@fasaucalgary.ca and Web: www.fasaucalgary.ca.

Society of Undergraduates in Economics:

<https://www.ucalgarysue.com/>.

Society of Undergraduates in Economics is a student run organization whose main purpose is to assist undergraduate economics students to succeed both academically and socially at the University of Calgary. Services include access to the exam bank, career events such as Industry Night and information sessions, mentorship programs, and social events for members. They invite you to join by contacting SUE at societyofundergradsineconomics@gmail.com.

Faculty of Arts Program Advising and Student Information Resources:

- Have a question, but not sure where to start? The Arts Students' Centre is your information resource for everything in Arts! Drop in at SS102, call them at 403-220-3580, or email them at artsads@ucalgary.ca. You can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate>, which has detailed information on common academic concerns, including program planning and advice.
- For registration (add/drop/swap), paying fees and assistance with your Student Centre, contact Enrolment Services at 403-210-ROCK [7625] or visit them in the MacKimmie Library Block.

Student Support and Resources:

- See <https://www.ucalgary.ca/registrar/registration/course-outlines> for information on campus mental health resources, the Student Ombuds' Office, Student Success Centre, Safewalk, and Emergency Evacuation and Assembly.
- Online writing resources are available at <https://ucalgary.ca/student-services/student-success/writing-support>.

Notes:

1. Please note that the following types of emails will receive no response: emails not addressed to anyone in particular; emails where the recipient's name is not spelled correctly; anonymous emails; emails which do not specify the course and section in which you are registered; and, emails involving questions that are specifically addressed on the course outline.
2. I check my emails twice per day, once in the morning and once in the afternoon. (Excluding weekends) Due to the nature of on-line delivery, I will try my best to return any enquiries within 24 hours.
3. Students are responsible for all assignment material, e.g. supplementary material posted on D2L, regardless of whether or not the material was covered in class.
4. Due to the pandemic, all quizzes and exams will be given on-line.

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2021-05-26