

## Economics 209 (L01) (Engineering Economics)

Instructor: Ipek Tastan

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Office: SS 417

Office Hours: MW 16:00 – 17:00  
(or by appointment)

Lecture Location: ENG 60

Lecture Days/Time: MW 18:00 - 20:45

Tutorial Days/Time/Location:

Tutorial 1: MW 17:00 – 17:50 ICT-114

Tutorial 2: MW 17:00 – 17:50 ENG-224

Summer 2023

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### Course Description:

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

### Course Learning Outcomes:

The objective of this course is to introduce the engineering students to the discipline of economics and its importance in the field of engineering, and to provide them with the basic economic and financial concepts for decision making of various engineering projects and financial management.

The curriculum involves two parts. 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. It addresses the important macroeconomic issues such as the measurement of GDP, inflation, and the importance of investment spending and the banking system. Since the interest rate is the firm's financial cost of capital, this part explores 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.

**Course Outline:**

This course covers the following topics. (Note: Some topics may be added or removed depending on time constraints)

Parts	Topics	Textbook Chapters
<b>Part 1</b> Macroeconomic Foundations	<b>Introduction</b>	
	Introduction to Economics	Hubbard – Chapter 1.
	<b>Basic Economic Concepts</b>	
	Supply and Demand	Hubbard – Chapter 3.
	Gross Domestic Product (GDP)	Hubbard – Chapter 4, 6.
	Unemployment and Inflation	Hubbard – Chapter 5.
	Money and Banking	Hubbard – Chapter 10.
<b>Part 2</b> Engineering Economic Analysis	<b>Time Value of Money</b>	
	Interest and Equivalence	Newnan – Chapter 3.
	Equivalence for Repeated Cash Flows	Newnan – Chapter 4.
	Annual Cash Flow Analysis	Newnan – Chapter 6.
	<b>Project Analysis</b>	
	Present Worth, Rate of Return, and Other Analysis Techniques	Newnan – Chapter 5-8.
	Income, Depreciation, and Cash Flow	Newnan – Chapter 11-12.
	Cost of using Borrowed Money	Newnan – Chapter 9.
Replacement Analysis	Newnan – Chapter 13.	

**Prerequisites/corequisites:**

Students must be in the Faculty of Engineering with second year standing or higher. The prerequisites for this course can be found at: <https://www.ucalgary.ca/pubs/calendar/current/economics.html>. 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):**

Newnan, D.G., Whittaker, J., Eschenbach, T.G., Lavelle, J.P., 2018. Engineering Economic Analysis, Fourth Canadian Edition. Oxford University Press.

**Recommended Textbook(s):**

Hubbard, R.G., O'Brien, A.P., Serletis, A., Childs, J., 2021. Macroeconomics, Third Canadian Edition. Pearson Canada Inc, Toronto.

**Books on Reserve:**

The list of reserve titles, if any, is posted at the course D2L site.

**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:**

Students are expected to attend the weekly tutorial section to which they have been assigned. During the tutorials, the TA will discuss pre-assigned questions and additional material relevant to the course that is not covered in lectures.

**Grade Determination:**

MIDTERM EXAM	50%
FINAL EXAMINATION	50%
	100%

**Examination Details:**

Tests and exams **WILL** involve some multiple choice questions.

Programmable calculators, cellphones, textbooks, course notes, and other electronic devices will not be allowed during the writing of tests or final examinations. Students are reminded that simply being able to access their cellphone during an exam is academic misconduct.

The exact date for the in-class midterm will be announced at least one week in advance.

**Grading Policies:**

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

Students must receive a passing grade on the final exam to pass the course. Students committing academic misconduct during the final exam will not receive a passing grade for the course.

If a student's letter grade on the final exam exceeds their midterm(s) letter grade, the weight of the midterm(s) is (are) transferred to the final exam. The student must have written the midterm(s) or provided supporting documentation for the absence(s). For Summer 2023 the University has suspended the requirement for supporting documentation. Instructors cannot currently ask students for documentation to support absences.

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>.

Any student work which remains undistributed after the last day of classes will be available to students through the instructor's office during the instructor's office hours.

The final examination will be comprehensive, scheduled by the Registrar, held in a classroom, and last 2 hours. If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred <https://www.ucalgary.ca/pubs/calendar/current/g-3-4.html>. Under no circumstance 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:**

*For Reappraisal of Graded Term Work, see Calendar I.2*

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

*For Reappraisal of Final Grade, see Calendar I.3*

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

**Academic Misconduct and Intellectual Honesty:**

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.

*Statement on Academic Integrity, see Calendar K.4*

<https://www.ucalgary.ca/pubs/calendar/current/k-3.html>

*Plagiarism and Other Academic Misconduct*

<https://ucalgary.ca/student-services/student-success/learning/academic-integrity>

**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 policies on Student Accommodations are available at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf> and <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>.

**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/sites/default/files/teams/1/faq-privacy-faculty-members.pdf> and <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/faq-privacy-students.pdf>

**Internet and Electronic Communication Device information:**

The use of cell phones for any purpose in class is prohibited. Computers and tablets may be used for note taking only unless otherwise authorized by the instructor.

**Copyright Legislation:**

See the University of Calgary policy on Acceptable Use of Material Protected by Copyright at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Acceptable-Use-of->

[Material-Protected-by-Copyright-Policy.pdf](#). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

**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>.

**Instructor Intellectual Property:**

Course materials created by instructors (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.

**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](mailto:econrep@fasaucalgary.ca) and Web: [www.fasaucalgary.ca](http://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 [sue@ucalgarysue.com](mailto:sue@ucalgarysue.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](mailto: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. Students are responsible for all assigned material, e.g., supplementary material posted on D2L, regardless of whether or not the material was covered in class.
2. 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 in which the sender has not identified which course and section he/she is taking; and emails involving questions that are specifically addressed on this course outline. For a quicker response time, please copy your TA on emails.

IT

2023-05-23