

## Economics 209(L01) (Engineering Economics)

Instructor: Douglas McClintock  
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Lecture Location: SB 103  
Lecture Days/Time: Tues-Thurs. 11:00 – 12:15

Office: SS348  
Office Hours: Tues.: 3:30 p.m. to 4:30 p.m.  
Mon. and Wed.: 1:30 p.m. to 2:30 p.m.

(Winter 2017)

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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, project evaluation with taxes and depreciation, social decision making and government projects. Examples are drawn from engineering projects.

### Course Objectives/Learning Outcomes

The objective of this course is to 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 addition, we look at the important macroeconomic issues such as GDP, inflation, business cycle theory, and the financial markets. 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.

**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, 3<sup>rd</sup> Canadian Edition

**Reserved Readings**

Mankiw et al. *Principles of Macroeconomics*. Sixth Canadian Edition. Toronto: Thomson Nelson.

**Course Requirements/Assessments:**

	<u>Course Topics</u>	<u>Text</u>
1.	Introduction	<i>Lecture notes</i> Chapter 1 and 2 ( <i>Mankiw et al.</i> )
2.	Micro and Macroeconomics	<i>Lecture notes</i> Chapters 5, 6, 9 & 10 ( <i>Mankiw et al.</i> )
3.	Time Value of Money and Economic Equivalence	Chapters 3 and 4 ( <i>Park et al.</i> )
4.	Analysis of Independent Projects / Mutually Exclusive Alternatives	Chapters 5 and 6
5.	Depreciation and Income Taxes	Chapters 8 and 9
6.	Developing After Tax Cash Flows (with and without borrowed funds)	Chapter 10
7.	Replacement Decisions	Chapter 11
8.	Inflation and Project Cash Flows	Chapter 14
9.	Economic Analysis in the Public Sector	Chapter 13

The basic lecture notes for Course Topics #1 and #2 (without graphs) will be provided on Desire2Learn. These notes are usually posted after the lecture so attendance to the lecture is important. Any graphs and additional notes that students may wish to take down can be added to the notes from Desire2Learn.

Midterm Examination (Thursday March 2 <sup>nd</sup> , 2017)	1	30%
Quizzes [highest 4 marks will be selected] Quiz dates will be announced during the semester.	5	20%
Final Examination	1	50%
Total		100%

**Tutorials**

The tutorials will be 50 minutes in duration and these tutorials will allow the student to work on problem sets and clarify various economic concepts. Quizzes will be held in the tutorials. The starting date of the tutorials will be announced in class.

**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.

### Grade Determination and Final Examination Details

Department of Economics Criteria for Letter Grades. Economics professors use the following criteria when assigning letter grades:

Grade	Grade Point Value	Description	Grade	Grade Point Value	Description
A+	4.00	Outstanding	C+	2.30	
A	4.00	Excellent-superior performance, showing-comprehensive understanding of subject matter	C	2.00	Satisfactory – basic understanding of the subject matter
A-	3.70		C-	1.70	Receipt of a grade point average of 1.70 may not be sufficient for promotion or graduation. (See individual undergraduate faculty regulations.)
B+	3.30		D+	1.00	
B	3.00	Good – clearly above average performance with knowledge of subject matter generally complete.	D	1.00	Minimal pass – marginal performance; generally insufficient preparation for subsequent courses in the same subject.
B-	2.70		F	0	Fail – unsatisfactory performance or failure to meet course requirements
			I	0	Incomplete – unsatisfactory (effective January 2007)

### Grading Scale

A+	95 – 100	B	73 – 76	C-	60 – 62
A	85 – 94	B-	70 – 72	D+	56 – 59
A-	80 – 84	C+	67 – 69	D	50 – 55
B+	77 – 79	C	63 – 66	F	0 – 49

Tests and final exams are marked on a numerical (percentage) basis, then converted to letter grades. The course grade is then calculated using the weights indicated above. The cut-off between letter grades will be at the midpoint between the numerical grades. Part marks of 0.5 or above will be rounded up; below 0.5 will be rounded down. For example, a grade of 79.5 will received an A- where a grade of 79.4 will receive a B+.

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

There will be a Registrar scheduled final examination, held in a classroom, lasting 2 hours. Non-programmable calculators will be allowed during the writing of tests or final examinations. Tests and exams will involve multiple choice and problem solving questions.

### **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>

A student who feels that a piece of graded term work (e.g., term paper, essay, test) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within 15 days of being notified about the mark or of the item's return to the class; no reappraisal of term work is permitted after the 15 days. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next 15 days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same. If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within 15 days of the unfavourable decision. In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

### **Plagiarism and Other Academic Misconduct**

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual Honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct,

<http://www.ucalgary.ca/pubs/calendar/current/k.html>

### **Academic Accommodation**

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. For additional information on support services and accommodations for students with disabilities Visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/).

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 [www.ucalgary.ca/policies/files/policies/student-accommodation-policy\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy_0.pdf)

### Absence from a Quiz/Test/Exam

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. 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 [www.ucalgary.ca/registrar/exams/deferred\\_final](http://www.ucalgary.ca/registrar/exams/deferred_final) Under no circumstance will this be accommodated by the department.

### Important Dates

Date	
Mon. Jan 9	Lecture begins
Fri. Jan 20	Last day to drop full courses (Multi-term) and Fall Term half Courses. No refunds for full courses (Multi-term or Fall Term half courses after this date.
Mon. Jan 23	Last day to add or swap full courses (Multi-term) and Fall Term half courses. Last day for change of registration from audit to credit or credit to audit.
Fri. Jan 27	Fee payment deadline for Fall Term full and half courses
Feb 20 - 24	Reading Break. No lectures.
Thurs. Mar. 2	<b>Midterm Test</b> (during class time)
Wed. Apr 12	Fall Term Lectures End. Last day to withdraw with permission from Fall Term half courses.
Apr 15 – 26 <sup>th</sup>	Winter Term Exam Period

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

Economics Department Representative

Office: SS 803, E-mail: [econrep@fasaucalgary.ca](mailto:econrep@fasaucalgary.ca) Web: [www.fasaucalgary.ca](http://www.fasaucalgary.ca)

Society of Undergraduates in Economics

[www.ucalgarysue.com](http://www.ucalgarysue.com)

Society of Undergraduates in Economics is a student run organization whose main purpose is to assist undergraduate economics students succeed both academically and socially at the University of Calgary. Services include access to the exam bank, career partnerships with the Career Centre through hosting industry nights and information sessions, recognizing achievements in teaching, and organizing social events for members.

### *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.
- Online writing resources are available at <http://www.ucalgary.ca/ssc/resources/writing-support>

### **Evacuation Assembly Point**

In case of an emergency evacuation during class, students must gather at the designated assembly point nearest to the classroom. The list of assembly points is found at

[www.ucalgary.ca/emergencyplan/assemblypoints](http://www.ucalgary.ca/emergencyplan/assemblypoints)

Please check this website and note the nearest assembly point for this course

### **Safewalk**

The Safewalk program provides volunteers to walk students safely to their destination anywhere on campus. This service is free and available 24 hrs/day, 365 days a year.

**Call 403-220-5333**