

MECH 431 – Engineering Economics Course Syllabus

Summer 2019 – Terms 1 and 2

Learning Objectives

By the end of this course, you should be able to:

- Explain the fundamental concepts of engineering economics
- Estimate capital costs, operating costs, and total production costs
- Distinguish and apply various techniques for economic assessment, alternatives evaluation, and decision making
- Incorporate risk and uncertainty into your economic analyses

Instructor

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Teaching Assistants

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Learning Materials

- Online Video Lectures
- Readings
- Video conference – every two weeks
- Discussion board (Piazza)
- Other online resources

Evaluation

- Assignments (4): 20% - Submit via UBC Canvas
- Short Quizzes (13): 20% - Online quiz on Canvas
- Midterm 1: 25% - Open book, take home
 - Note: midterm exams may be graded on a curve to reflect open nature of the exams
- Final Report: 35% - Submit via UBC Connect. May be required to submit via TurnItIn or similar

Recommended Textbook

Engineering Economic Analysis (4th Canadian Edition). Newnan, et al. Oxford University Press, 2018.

ISBN: 978-0199025114

Previous editions are okay (e.g. Engineering Economic Analysis (3rd Canadian Edition). Newnan, Whittaker, Eschenbach, and Lavelle. Oxford University Press, 2014. ISBN: 978-0-19-544754-5)

Online Resources

UBC Canvas

All instructional materials will be distributed through UBC Canvas, including (but not limited to)

- Lecture notes and reading assignments
- Additional reading material
- Course related announcements
- Practice problems and solutions
- Quizzes
- Assignments and solutions

Piazza

The online discussion and question forum will be Piazza. Sign up using your UBC e-mail address at piazza.com/ubc.ca/summer2020/mech431

The expectation for this class is discussions will be student led and answered. All questions related to course material shall be directed through Piazza. **THE INSTRUCTOR WILL NOT ANSWER COURSE MATERIAL QUESTIONS BY EMAIL.**

Web conferences

Approximately once every two weeks week, the instructor will hold an online web conference to discuss matters in a real-time environment. Topics can include class logistics, assignment reviews, papers and articles of interest and any other material the instructor deems relevant. Participation is recommended, but not required. To assist students with schedules that do not permit attending the web conferences, all conferences will be recorded and the recordings made available through Connect.

Schedule

Week	Dates	Topics (subject to change)	Lessons	Chapters	Assignments	Quiz
1	May 10-16	Introduction, General Economic Concepts	1, 2, 3	1		Chapter 1
2	May 17-23	Cost models, Cashflow diagrams, Simple Cash Models	3, 4, 5	2, 3 , 1		Chapter 2
3	May 24-30	Time value of money, Interest	5, 6	3	Assignment 1 Due	Chapter 3
4	May 31- June 6	Time Value of Money, Interest and Present Worth Analysis (Sources of Capital?) REPORT THESIS DUE	7, 8	4, 5		Chapter 4 Chapter 5
5	June 7-13	Annual Cash Flow Analysis, Rate of Return Analysis	9, 10	6, 7	Assignment 2 Due	Chapter 6
6	June 14-20	Incremental Analysis, Other analyses	11, 12	7, 8		Chapter 7
7	June 21-27	Midterm #1 Catchup week				Chapter 8 (covers lessons 12 and 4)
8	June 28 – July 4	TERM BREAK CANADA DAY				
9	July 5-11	Sensitivity and Risk Analysis REPORT OUTLINE DUE	13, 14, 15	10		Chapter 10
10	July 12-18	Taxes and Depreciation	16, 17	11, 12	Assignment 3 Due	Chapter 11 Chapter 12
11	July 19-25	Inflation, Replacement Analysis	18, 20	13, 14		Chapter 14
12	July 26- August 1	Total Cost of Ownership, Replacement analysis	20, 21	13		Chapter 13
13	August 2-8	Public Sector Analysis, Accounting	22, 23	8	Assignment 4 Due	Chapter 8 2
14	August 9-15	Warranties and service contracts	24	N/A		
15	Aug 16-22	Exams Period – no final exam but FINAL REPORT DUE AUGUST 19th			FINAL REPORT DUE AUGUST 19th	

General Expectations

- You are expected to do the work.
- Respectful behavior is expected at all times from all students and instructors, including in all online posts, emails and other communications. All participants in this course are entitled to an environment free from harassment and discrimination. See UBC Policies on harassment and sexual assault for more information.
 - o <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,87,0>
 - o https://universitycounsel.ubc.ca/files/2017/05/policy131_final.pdf
 - o <https://sexualviolenceresponse.ubc.ca/>
- Additionally, UBC recognizes students have a diversity of needs. See UBC's policies on religious observation and accommodation of students with disabilities
 - o <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,34,0,0>
 - o <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,48,0,0>
- Deadlines: assignment and project deadlines are hard dates.
 - o Assignments not received by the due date shall be graded zero.
 - o Final Project:
 - up to 24 hours late – 10% off the received mark
 - 24 to 96 hours late – 30% off the received mark
 - Over 96 hours late – 50% off the received mark
- If unable to attend a midterm or submit an assignment due to major illness or family emergency (including COVID related situations), contact the instructor – alternative arrangement will be made (documentation may be required). Given the length of time available for the final project, no exceptions will be made for it. Early submission of the final project is encouraged.

Student Wellbeing

UBC has a number of resources to support student wellbeing and diverse student needs. See the links below for more information

- <https://students.ubc.ca>
- <https://students.ubc.ca/health-wellness/wellnesscentre>

Academic Integrity

Academic integrity is a core principle, and is particularly relevant for an online course. See UBC's policy on academic integrity, and on academic freedom.

- <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,286,0,0#15620>
- <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0>