

IE 1040 – Engineering Economic Analysis

Fall 2021

Course Syllabus

(Version: Aug 28, Subject to change)

Instructor

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Office: Zone 4, 220

Office Hours: Monday, 11:40 to 17:40

Teaching Assistant

Section 1:

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Lecture

Section 1:

Mondays, 08:15 to 11:00, Zone 3, 311

Section 2:

Thursdays, 13:50 to 16:25, Zone 3, 106

Course Description

This course considers the broad question of how to make good decisions in an engineering context. Money is used as a representation for any set of resources that may come into play in engineering a system. We will discuss the basics of decision making from an economic point of view, learn a number of terms and common formulae, and practice several types of calculations used in engineering economic analysis.

Course Prerequisites

IE junior status or instructor's permission.

Course Objectives

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to identify, formulate and solve engineering problems.
3. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

4. A knowledge of contemporary issues.

Applicable ABET Outcomes

Upon successful completion of this course, students should be able to:

1. describe the economic concepts of supply, demand, and production
2. conduct simple cost-benefit analysis and break-even analysis
3. describe return on investment and the time value of money
4. have the skills necessary to manage money
5. understand and apply the accounting for risk as applied to the engineering process

Textbook

Newman, Eschenbach, and Lavelle, Engineering Economic Analysis, 13th Edition, Oxford University Press, 2017, ISBN-13: 978-0190296902.

Grading

Attendance, Participation in Classroom Discussions/Exercises:	10%
Assignments:	20%
Group Project:	20%
Examination # 1:	15%
Examination # 2:	15%
Final Examination:	20%

Exams

There will be three exams, all are CLOSED BOOK, CLOSED NOTES, CLOSED COMPUTER. Students are allowed to bring one one-sided A4 page note and it **MUST** be hand-written. Violators will receive a score of “zero” for that exam. If you must miss an exam, you should make alternative arrangements with the instructor before the exam is given. If you miss an exam without prior notification, you will receive a score of “zero” for that exam except under extenuating circumstances. You will need a scientific calculator.

Assignments and Quizzes

Homework will be assigned weekly and needed to be finished before the next class. You are encouraged to work on these assignments with your classmates. Late submission will not be accepted. Homework solutions must be submitted to the Blackboard system. No make-up quizzes or in-class activities are allowable except under extenuating circumstances.

Group Project

Group project will be described in separate handouts as they are assigned.

Participation

Regular attendance as well as active classroom participation is expected. Any required student absences should be reported to the instructor in advance via email or if not possible in advance, shortly thereafter. Maximum ten points will give to the students who attended all of the classes and accumulated the highest points of the answer questions during the class. The rest of students will gain the points by the ratio of their points and the highest points times ten.

Avoiding Plagiarism

1. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
2. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.

Tentative Course Schedule

Lecture	Dates	Topics	Chapter
1	S1: Aug 30 S2: Sep 2	Introduction and Economic Decisions	1
2	S1: Sep 6 S2: Sep 9	Cost and Interests	2&3
3	S1: Sep 13 S2: Sep 16	Present Worth and Time Periods	4&5
4	S1: Sep 26 S2: Sep 23	Uniform Series and Capital Recovery	6
5	S1: Sep 27 S2: Sep 30	Exam 1	
6	S1: Oct 11 S2: Oct 14	Alternatives and loan	8
7	S1: Oct 18 S2: Oct 21	Future Worth, Payback Periods, and Break Even	9
8	S1: Oct 25 S2: Oct 28	Depreciation and Inflation	11&14
9	S1: Nov 1 S2: Nov 4	Rate of Return Analysis	7
10	S1: Nov 8 S2: Nov 11	Exam 2	
11	S1: Nov 15 S2: Nov 18	Income taxes for Corporations	12
12	S1: Nov 29 S2: Dec 2	Personal Finance	12
13	S1: Dec 6 S2: Dec 9	Replacement Analysis	13
14	S1: Dec 13 S2: Dec 16	Reviews	
15	S1: Dec 20 S2: Dec 23	Group Presentation	
16	S1: Dec 30 S2: Dec 30	Final Exam Final Exam	