

IE 1040 – Engineering Economic Analysis
Course 312019030
Fall 2023
Syllabus

Instructor: Sophia Zuoqiu, D.Sc.

Credit Hours: 3

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Office Hours: Wednesday, 1:30pm-4:00pm, or by appointment

Office: Room 322A, Zone 3, Liberal Arts Building

Lecture Time: Thursday, 1:50pm-4:25pm

Lecture Location: Zone 3, room 102

Course Description

This course considers the broad question of how to make good economic decisions in an engineering context. Money is used as a representation of 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 and Participation:	10%
Homework:	20%
Group Project:	20%
Mid-term Examination:	20%
Final Examination:	30%

Note on Grading:

- If homework is turned in late, it will not be accepted and the student will receive no mark on the assignment.
- No make-up quiz will be issued.
- Midterm and final exams cannot be rearranged for individual student(s). Make-up midterm exam is only granted for student(s) with official absence notice (ideally prior to exam date).
- NO make-up final exam will be issued.

Exams

The exams are CLOSED BOOK, CLOSED NOTES, and CLOSED COMPUTER.

Homework

Homework will be assigned periodically during the semester and is intended for individual work. No late assignment will be accepted.

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.

Policy on 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.

Video and Audio Recording Policy

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion, and activities without the advance written permission of the instructor, and any such recording properly approved in advance should be used solely for the student's private use.

Lecture Schedule (subject to change)

Week	Lecture/Content
1	Introduction and Overview of Course
2	Decision-making
3	Cost and Benefits
4	Interests and Equivalence
5	Equivalence for Repeated Cash Flow
6	Present Worth Analysis
7	Annual Cash Flow Analysis
8	Review
9	Midterm Exam
10	Rate of Return
11	Alternatives
12	Uncertainty
13	Depreciation
14	Replacement
15	Inflation and Price Change
16	Group Project
17	Group Project+Review
18	Final Exam