SCUPI
Sichuan University - Pittsburgh Institute

# IE 1040 – Engineering Economic Analysis

## Fall 2024

## Course Syllabus

(Version: Sep 10, Subject to change)

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## Instructor

Dr. Changxi Wang (Email: changxi.wang@scupi.cn)
Office: SCUPI Building N403
Office Hours: Wednesday, 12:00 to 18:00

## Teaching Assistant

Qingyue Deng (anna_deng@163.com)
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QQ Group:783505922

## Lectures

Wednesdays, 08:15 to 11:00, SCUPI Building N210

## 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, Participation in Classroom Discussions/Exercises: | 10% |
| Assignments: | 20% |
| Project: | 20% |
| Mid-term Examination: | 20% |
| Final Examination: | 30% |

| Score | Letter Grade |
|---|---|
| 90.00-100.00 | A |
| 85.00-89.99 | A- |
| 80.00-84.99 | B+ |
| 76.00-79.99 | B |
| 73.00-75.99 | B- |
| 70.00-72.99 | C+ |
| 66.00-69.99 | C |
| 63.00-65.99 | C- |
| 61.00-62.99 | D+ |
| 60.00-60.99 | D |
| 0.00-59.99 | F |

### Exams

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

### Assignments and Quizzes

Homework will be assigned weekly and needed to be finished before the next class. Homework solutions must be submitted to the Blackboard system.

### 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.

## 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 | Sep 4 | Introduction and Economic Decisions | 1 |
| 2 | Sep 11 | Costs and Benefits | 2 |
| 3 | Sep 18 | Interests and Equivalence | 3 |
| 4 | Sep 25 | Equivalence for Repeated Cash Flows | 4 |
| 5 | Oct 9 | Present Worth Analysis | 5 |
| 6 | Oct 16 | Annual Cash Flow Analysis | 6 |
| | Oct 23 | Mid-term Exam | |
| 7 | Oct 30 | Rate of Return Analysis | 7 |
| 8 | Nov 6 | Choosing the Best Alternative / Project Proposal Review | 8 |
| 9 | Nov 13 | Other Analysis Techniques | 9 |
| 10 | Nov 20 | Uncertainty in Future Events | 10 |
| 11 | Nov 27 | Depreciation | 11 |
| 12 | Dec 4 | Replacement Analysis, | 13 |
| 13 | Dec 11 | Inflation and Price Change | 14 |
| 14 | Dec 18 | Group Presentation / Project Report Submission | |
| | Dec 25 | Final Exam | |