

Engineering Economic Analysis

General Information:

Course ID#: IE1040

Prerequisites: none

Credit hours: 3

Time: T 1:50 – 4:25pm

Office hours: M 1:00 – 3:30pm, T 1:00 – 1:40pm, W 1:00 – 3:30pm, Th 10:00 – 11:30am,
1:00 – 1:40pm and by appointment

Office location: SCUPI Zone 3 #324A

Email: lizyunli@scu.edu.cn

TA: Liu Miao, Yang Jingsong

Course Website: <https://learn.scupi.cn>

Course QQ: See code picture on the last page

Microsoft Excel: It is assumed that all students in the course have at least a basic understanding of how to use Microsoft Excel for spreadsheets.

Course Description:

Discusses cost estimation, time value of money, interest rate calculations, economic equivalence concepts, comparison of alternative investments, evaluating replacement alternatives, depreciation, the impact of taxes on engineering economic decisions, inflation, and dealing with uncertainty.

Course Objectives:

- To provide an understanding of why economic analysis is a core competency for any engineer in a decision-making role.
- To teach the fundamental concepts and techniques used in engineering economic analysis.
- To provide an understanding of the use of economic analysis in contemporary problems.
- To familiarize students with the use of spreadsheets for economic analysis.

Applicable ABET Outcomes:

- (a) An ability to apply knowledge of mathematics, science and engineering
- (e) An ability to identify, formulate and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- (j) A knowledge of contemporary issues.

Required Texts:

Newnan, Donald G; Eschenbach, Ted G; and Lavelle, Jerome P; Engineering Economic Analysis, International 12th Edition, Oxford University Press, 2013.

Course Website:

We'll use blackboard to make announcement, distribute lecture notes, homework problems and answer keys, etc. Make sure to check the course page in blackboard frequently to stay updated.

Course QQ group

We'll also have a course QQ group managed by the head TA, Liu Miao. That'll be another place where we may make announcements, or you could ask questions and have discussions. Instead of holding office hours in a physical location, the TA will be available to answer course-related questions through QQ.

Course Requirements:

- Read the chapter before coming to class
- Check blackboard for lecture notes, answer key to homework and quizzes, and other course related announcements and materials
- Be focused and actively participate in class discussion and studio work
- Review after class, work on the homework problems, raise questions if any
- Be on time, and keep your cell phones off during class time
- We'll have studio work and quizzes where your attendance and participation are important. No makeup quiz or studio work will be given. If you have a legitimate reason to miss a class, make sure to email me and cc your class counselor beforehand.
- **Uphold Academic Honesty:** cheating in a quiz or a homework will result in a 0 for it. Cheating in an exam will result in an F for the course.

Exams:

One Midterm and one Final, noncumulative. One A4 size note allowed.

Quizzes:

We'll have about six quizzes in class. One A4 size note allowed.

Studio work:

We'll do problem solving and case studies in small groups in class. Sometimes you will be randomly divided into groups, sometimes you will have the opportunity to choose your own group members. At the end of the group activities you should be ready to share your group's work with the rest of the class.

Homework

Homework will be assigned for each chapter and you're expected to work on them before next week's class. Feel free to work in groups and discuss homework problems with your classmates. Homework will not be collected, instead we'll use studio work and quizzes to

make sure that you have done your homework and mastered the materials in time. No makeup quiz or studio work will be given.

Grading:

- Studio work: 20%
- Quizzes: 26%
- Midterm Exam: 27%
- Final Exam: 27%

Approximate Course Schedule:

Week One

Chapter 1 Making Economic Decisions

Chapter 2 Estimating Engineering Costs and Benefits

Week Two

Chapter 2 Estimating Engineering Costs and Benefits

Week Three

Chapter 3 Interest and Equivalence

Week Four

Chapter 4 Equivalence for Repeated Cash Flows

Week Five

National Day Break

Week Six

Chapter 5 Present Worth Analysis

Week Seven

Chapter 6 Annual Cash Flow Analysis

Week Eight

Chapter 7 Rate of Return Analysis

Week Nine

Midterm Exam

Week Ten

Chapter 8 Choosing the Best Alternative

Week Eleven

Chapter 9 Other Analysis Techniques

Week Twelve

Chapter 10 Uncertainty in Future Events

Week Thirteen

Chapter 11 Depreciation and Capital Allowances

Week Fourteen

Chapter 12 Taxes

Week Fifteen

Chapter 13 Replacement Analysis

Week Sixteen

Review and Catchup

Week Seventeen

Final Exam

Course QQ



工程经济

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