



Department of Industrial Engineering

IENG 315 Engineering Economics

Instructor: Dr. Efthimia Staiou

E-mail: effi.staiou@yasar.edu.tr

Office: U-214

Extension: 5665

Office Hours : Thursday 14 :00 – 14 :50
or by e-mail appointment

TA:

E-mail:

Office:

Extension:

Office Hours :

Class meetings:

Mondays 13:00 – 14:50 at Y-324

Wednesdays 10:00 – 11:50 at Y-324

COURSE DESCRIPTION

Fundamental principles of engineering economic; accounting in economic decisions; concepts of time value of money, interests and economic equivalences; evaluation of potential investment opportunities; equivalent annual; capital cost, rate of return (ROR, IRR); effects of depreciation; loss of value; project cash flow; cost-benefit analysis.

PREREQUISITES

Basic knowledge of mathematics as well as some computer background.

COURSE WEB SITE

lectures.yasar.edu.tr : **IENG315EK**

Web page: <http://estaiou.yasar.edu.tr/courses/>

TEXT

Chan S. Park, “Contemporary Engineering Economics”, Addison Wesley, 4th / 5th Edition.

REFERENCES

- Chan S. Park, "Fundamentals of Engineering Economics", Prentice Hall, 3rd Edition.
- Sullivan, Wicks & Koelling, "Engineering Economy", Prentice Hall, 15th Edition.

OBJECTIVES

This course will provide a solid foundation in engineering economics and define the role of industrial engineers in business.

After completing IENG 315, students will be able to understand:

- the fundamental principles of engineering economic
- The role of accounting in economic decisions and how to conduct a ratio analysis
- The time value of money, interests and economic equivalences
- How companies evaluate potential investment opportunities (net-present-worth)
- How to determine the equivalent annual worth for a given project, the capital cost, and the unit cost, or unit profit
- The meaning and the various methods to compute the rate of return (ROR, IRR)
- The meaning and types of depreciation and how to account for the loss of value of an asset
- What constitutes a project cash flow and how to develop one

EXAMS

- There will be a midterm exam during the midterm examination week. The exam will contain material covered prior to the exam.
- Final exam will be given during the examination week and will be a comprehensive exam.
- Both exams are closed-book-notes exams.
- Each student is allowed to prepare 1 page (front and back) cheat sheet for the midterm exam and an additional page for the final exam.
- The exams will be graded by the Instructor.

QUIZES

- Quizzes may be given in class during the practice sessions. They will be announced at least one lecture before the quiz is given.
- There are no make-up quizzes.
- Quizzes are closed-book-notes examinations.
- Quizzes will be graded by the Teaching Assistant assigned to the course.

HOMEWORK

- Homework (HW) will be regularly assigned approximately every other week except the first, the last and the midterm exam week which amounts to tentatively 4 to 6 homework sets of problems during the semester.
- Completed HW assignments should be turned in by the beginning of class on the due date in class. Unless specified otherwise, you must work on your HW individually.
- No late HW will be accepted unless there is a valid reason. In that case, the HW has to be turned in next class period.
- Instructions for the format of the HW will be given separately.
- Homework will not be graded and the solutions will be presented in practice sessions by the Teaching Assistant assigned to the course.

PROJECT

- A term project will be assigned to groups of students.
- You must work on the project as a team.
- Instructions for the project will be given separately.

TENTATIVE GRADING

- A student's course grade will be based on total points accumulated. The grade weight is as follows:

Midterm Exam	25
Final Exam	40
Project	15
Homework	10
Quizes	10
Total	100

Attendance/participation 5% (bonus)

- The Instructor reserves the right to make minor changes in the above table.
- The letter grade will be assigned based on the statistical distribution (curve fitting) of the class.

ATTENDANCE POLICY

- The attendance will be recorded once at the beginning of the class and once after the break. According to rules and regulations, anyone who attends less than 70% of classes will get R as a final grade.

ACADEMIC DISHONESTY

- Cheating is a **very serious offense**. Cheating consists of the use of any unauthorized material on an examination. Unauthorized material includes notes, book, and information stored in your calculator/cellular phone, or copying from another student. Cheating also consist of copying HW assignments, projects or other assignments.
- A penalty for cheating is an automatic F in the course.
- Act of cheating will also be reported to the Yasar University authorities.

CLASS DISTURBANCE POLICY

- A class disturbance is anything that may detract from your fellow classmate's learning experience or in teacher's ability to conduct a class. **Electronic devices such as cellular phones, pagers, and media players must be off while the student is in the classroom.** Please respect your peers by not being disruptive in the class.

IMPORTANT DATES

- First day of classes September 23, 2013
- Deadline for add/drop courses October 4, 2013
- Kurban Bayrami holiday October 15–18, 2013
- Republic day October 29, 2013
- Midterm exams week November 18 – 22, 2013
- New Year January 1, 2014
- Last day of classes January 10, 2014
- Final exams weeks January 13 -24, 2014

TENTATIVE COURSE OUTLINE

1. Economic Decisions in Engineering (Chapter 1) Week 1
 - a) Role of Engineers in Business
 - b) Large-Scale engineering economic decisions
 - c) Common types of strategic engineering economic decisions
 - d) Fundamental Principles of Engineering Economics
2. Accounting and Financial Decision-Making (Chapter 2) Week 1-2
 - a) Accounting
 - b) Financial status for businesses
 - c) Using ratios to make business decisions
3. Interest Rate and Economic Equivalence (Chapter 3) Week 3-4
 - a) Interest: The Cost of Money
 - b) Economic Equivalence
 - c) Interest Formulas/ Cash Flows

- | | |
|---|-------------------|
| 4. Understanding Money and Its Management | <u>Week 5</u> |
| a) Nominal and Effective Interest Rates | |
| b) Equivalence Calculations with Effective Interest Rates | |
| c) Equivalence Calculations with Continuous Payments | |
| d) Changing Interest Rates | |
| 5. Present-Worth Analysis (Chapter 5) | <u>Week 6-7</u> |
| a) Describing Project Cash Flows | |
| b) Initial Project Screening Method | |
| c) Discounted Cash Flow Analysis | |
| d) Variations of Present-Worth Analysis | |
| e) Comparing Mutually Exclusive Alternatives | |
| 6. Annual Equivalent-Worth Analysis (Chapter 6) | <u>Week 8-9</u> |
| a) Annual Equivalent-Worth Criterion | |
| b) Capital Costs Versus Operating Costs | |
| c) Applying Annual-Worth Analysis | |
| d) Life-Cycle Cost Analysis | |
| e) Design Economics | |
| 7. Rate-of-Return Analysis (Chapter 7) | <u>Week 10-11</u> |
| a) Rate of Return / Return on Investment | |
| b) Methods for Finding the Rate of Return | |
| c) Internal-Rate-of-Return Criterion (IRR) | |
| d) Mutually Exclusive Alternatives | |
| 8. Depreciation (Chapter 9) | <u>Week 12</u> |
| a) Asset Depreciation | |
| b) Factors Inherent in Asset Depreciation | |
| c) Book Depreciation Methods | |
| d) Tax Depreciation Methods | |
| 9. Developing Project Cash Flows (Chapter 10) | <u>Week 13-14</u> |
| a) Cost—Benefit Estimation for Engineering Projects | |
| b) Incremental Cash Flows | |
| c) Developing Cash Flow Statements | |
| d) Generalized Cash-Flow Approach | |

DISCLAIMER

The instructor reserves the right, when necessary, to alter the grading policy, change examination dates, and modify the syllabus and course content and timeplan. Modifications will be announced in class and/or course webpage. Students are responsible for announced changes.