



EASTERN MEDITERRANEAN UNIVERSITY
Department of Industrial Engineering
IENG420 Engineering Economy
COURSE OUTLINE



1979

COURSE CODE	<i>IENG420</i>	COURSE LEVEL	<i>Fourth year</i>	
COURSE TITLE	Engineering Economy	COURSE TYPE	<i>Department core/area elective</i>	
CREDIT VALUE	(3, 0) 3	ECTS VALUE	6	
PREREQUISITES	Senior Standing	COREQUISITES	-	
DURATION OF COURSE	One semester	Semester and year	FALL	2013-2014

WEB LINK	www.ie.emu.edu.tr			
	Name (group)	e-mail	Office	Telephone
Instructor(s)	Asst.Prof.Dr. Emine Atasoylu	emine.atasoylu@emu.edu.tr	C103	2815
Assistant(s)				
(labs/ tutorials)	Will be announced later			

Course Schedule: Tuesday 15:30-17:20 IE-D102 and Friday 16:30-17:20 IE-D102 (computer lab hrs will be announced later)

CATALOGUE DESCRIPTION

An introduction to the basics of economic analysis for decisions in engineering design, in manufacturing, in manufacturing equipment, and in industrial projects. Time value of money. Cash-flow analysis. Cost of capital. Return on investment. Elements of cost and cost estimation. Break-even analysis. Decision making among alternatives. Effects of depreciation. Taxes. Replacement analysis. Inflation.

AIMS & OBJECTIVES

The purpose of this course is to supplement engineering student's technical training with the knowledge and capability to perform financial analysis especially in the area of capital investment.

Course objectives (CO): (only significant contribution to PO's is shown)

1. To use engineering economy factors and different methods for the evaluation of alternatives (PO a, e, h, & k).
2. To carry out sensitivity analysis (PO a, e, i & k).
3. To integrate the effects of inflation, depreciation and/or tax into an economic analysis whenever necessary (PO a, e, i & h).
4. To use computer software for engineering economy analysis (PO b, i & k).

GENERAL LEARNING OUTCOMES (COMPETENCES)

On successful completion of this course, all students will have developed **knowledge** and **understanding** of:

- The fundamental concepts of engineering economy (CO1),
- How to use engineering economy factors to account for the time value of money (CO1),
- Service, revenue, mutually exclusive and independent alternatives (CO1&2),
- How to consider inflation in an engineering economy analysis (CO3),
- Depreciation and after tax economic analysis (CO3),
- The assumptions that form the basis of methods applied (CO1&2)

On successful completion of this course, all students will have developed **their skills in:**

- Economic analyses of alternatives using present worth, annual worth, future worth and rate of return methods (CO1),
- Selecting and applying a suitable technique for the comparison of mutually exclusive alternatives (CO1),
- Selecting and applying a suitable technique for the evaluation of independent alternatives (CO1),
- Identifying relevant data to successfully perform an engineering economy study (1,2,3&4),
- Evaluation of public projects using the benefit/cost ratio method (CO1),
- Performing replacement study among an existing asset or system and its possible alternatives (CO1),
- Determining the level of activity necessary or the value of a parameter to breakeven (CO2),
- Using computer software for engineering economy analysis (CO4)

On successful completion of this course, all students will have developed their **appreciation** of, and respect for **values and attitudes** to:

- The role of engineering economy in the decision making process (CO1,2&3),
- The importance of accuracy in estimating costs and revenue and sensitivity analysis to these values (CO2),
- Consider limitations of the analyses by taking into account the realistic constraints such as environmental, social, political and ethical (CO1, CO2, CO3&CO4),
- Understand the impact of engineering solutions in global, environmental and societal context (CO1,2,3&4)
- Professional and ethical responsibility (CO1,2,3&4)

LEARNING TEACHING METHODS

The function of teaching is to enable students to learn. Therefore students are required to read the chapters of the textbook before coming to class and solve the related end of chapter questions after each lecture. The instructor will lecture in class by writing on the board and some lectures will be given as power point presentation. Students will have lab sessions to learn how they can use computers to apply engineering economy techniques; MS EXCEL software package will be used for this purpose.

METHOD OF ASSESSMENT

Some examinations will be open book/closed notes type (and some closed book/closed notes type) based on lectures, discussions, textbook and assigned work. To enter a formal examination, a student has to present her/his EMU student Identification card to the invigilator.

Quizzes: There will be quizzes designed to test familiarity and basic understanding of various topics. There will be no quiz make-ups. (quiz dates will be announced later in class and on the web site)

Midterm Exam: The midterm exam will be held in the week designated by the university administration. It will cover all of the material up to the date of examination.

Final Exam: The final exam will cover the whole course material. In form it will be a longer version of the midterm exam.

Make-up Exams: Make-up examinations will only be offered to students who provided adequate documentation for the reason of their absence within four working days at the latest after the examination date. University regulations apply for graduate make-ups.

Any objection to the grade or mark should be made latest within a week following its announcement.

Grading Policy:

Participation	5%
Lab	5%
Quizzes	15%
Midterm Exam	35%
Final Exam	40%

Note that the instructor(s) reserve the right to modify these percentages in case they find it necessary.

ATTENDANCE

Attendance will be taken every lecture hour. Note that university regulations allow the instructor to give a grade of NG to a student whose absenteeism is more than 25% of the total lecture hours or who do not complete sufficient work.

TEXTBOOK/S (you are recommended to study from one of the following text books)

- Leland T. Blank, Anthony J. Tarquin “*Engineering Economy*” 6th edition, McGraw-Hill International Edition, 2005
- Leland T. Blank, Anthony J. Tarquin “*Engineering Economy*” 7th edition, McGraw-Hill International Edition, 2012
- Leland T. Blank, Anthony J. Tarquin “*Basics of Engineering Economy*”, McGraw-Hill International Edition, 2007

References

- William G.Sullivan, Elin M. Wicks and James T. Luxhoj “*Engineering Economy*” 14th edn, Prentice Hall, 2009
- Chan S. Park, “*Fundamentals of Engineering Economy*” 2nd edn, Prentice Hall, 2009
- Joseph C. Hartman, “*Engineering Economy and the Decision Making Process*” Prentice Hall, 2007

Week	Topics
1	Foundations of engineering economy; Factors: how time and interest affect money
2	Foundations of engineering economy; Factors: how time and interest affect money
3	Combining factors
4	Nominal and effective interest rates
5	Present-worth evaluations
6	Present-worth, future worth and capitalized cost evaluations
7	Equivalent-annual worth analysis and review
8-9	MIDTERM EXAMS
10	Rate of return analysis of single alternative
11	Rate of return evaluations for multiple alternatives
12	Benefit cost analysis and public sector economics
13	Replacement analysis
14	Breakeven analysis
15	Effects of inflation, effects of depreciation, taxes.

ACADEMIC HONESTY - PLAGIARISM

Cheating is copying from others or providing information, written or oral, to others. Plagiarism is copying without acknowledgement from other people’s work. According to university by laws cheating and plagiarism are serious offences punishable with disciplinary action ranging from simple failure from the exam or project, to more serious action (letter of official warning suspension from the university for up to one semester). Disciplinary action is written in student records and may appear in student transcripts.

PLEASE KEEP THIS COURSE SYLLABUS FOR FUTURE REFERENCE AS IT CONTAINS IMPORTANT INFORMATION

CONTRIBUTION OF THE COURSE TO PROGRAM EDUCATIONAL OBJECTIVES AND PROGRAM OUTCOMES:

This course contributes to the following program outcomes:

(a) an ability to apply knowledge of mathematics, science, and engineering.
(b) an ability to design and conduct experiments, as well as to analyze and interpret data.
(e) an ability to identify, formulate, and solve engineering problems.
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
(i) a recognition of the need for, and an ability to engage in life-long learning.
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.