

**DEPARTMENT OF INDUSTRIAL ENGINEERING
COURSE SYLLABUS**

IE 255: Engineering Economy

COURSE TITLE	ENGLISH CODE/NO	ARABIC CODE/NO.	CREDITS			
			Th.	Pr.	Tr.	Total
Engineering Economy	IE 255	٢٥٥ هـ ص	3	1	0	3
<i>Pre-requisites:</i>	MATH 110					
<i>Course Role in Curriculum (Required/Elective):</i>	Required Course					
<i>Catalogue Description:</i> Fundamentals of engineering economy. Time value of money. Evaluation of alternatives. Replacement and retention analysis. Break even analysis. Depreciation methods. Basics of inflation.						

Textbooks:

(Author, Title, Pub., year)

Blank, Leland T. and Tarquin, Anthony J., Basics of Engineering Economy, 1ST Ed., McGraw-Hill, 2008, ISBN 9780071287623.

Supplemental Materials:

Course Notes in IE255 Coordinator's web page:
Course outline, Course project, Homework, Old exams and Booklets for formulas and tables.

Course Learning Outcomes:

By the completion of the course the students should be able to:

1. Apply the fundamentals of engineering economy and the basic principles of the time value of money.
2. Draw the cash-flow diagrams (CFD).
3. Identify and compare different interest rates i.e., simple, compound, MARR, ROR, nominal and effective.
4. Compute equivalent values for time based cash flows of varying complexities.
5. Compare economic alternatives based on equivalent present worth (PW), future worth (FW), capitalized cost (CC), payback period (PbP), annual worth (AW) values and Benefit cost ratios (B/C).
6. Compute the internal rate of return (IRR) and evaluate an economic alternative on the basis of IRR.
7. Make analytical decisions by replacement and breakeven analysis of different projects / alternatives and analysis under uncertain conditions.
8. Compute the Present worth by considering the effects of inflation.
9. Estimate and allocate cost and apply capital budgeting.
10. Compute depreciations related to machines / projects using straight line (SL), Declining Balance (DB) and Double Declining Balance (DDB) method.
11. Apply the fundamentals of engineering economy and the basic principles of the time value of money.

Topics to be Covered:

**Duration
in Weeks**

1.	Foundations of Engineering Economy	1
2.	How Time and Interest Affect Money	2.5
3.	Nominal and Effective Interest Rate	2
4.	Present Worth Analysis	2
5.	Annual Worth Analysis	1.5
6.	ROR Analysis	0.5
7.	Benefit/Cost Analysis	0.5
8.	Breakeven and Payback Analysis	1
9.	Replacement Decisions	1
10.	Inflation Impacts	0.5
11.	Cost Estimation	1
12.	Depreciation	0.5

Student Outcomes addressed by the course: (Put a ✓ sign)

(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	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	✓
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(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	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	✓

Key Student Outcomes assessed in the course: (e) and (k)

Instructor or course coordinator:

Eng. Mohammed Abdullah Alharkan

Last updated: June 2014