

Faculty of Engineering & Technology

Engineering Economics

Information :

Course Code : MAN 381

Level : Undergraduate

Course Hours : 2.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	Arafa Soliman Sobh Khalil Arafa	2
Lecturer	Arafa Soliman Sobh Khalil Arafa	2
Teaching Assistant	Mirna Sharif Mohamed Salama	
Teaching Assistant	Manar Magdy Hassan Mohamed	1

Area Of Study :

Develop the student's ability to use the concepts of engineering economy as part of the decision making process.

Enrich the student's knowledge and understanding about the time value of money, engineering economic factors, cash flow analysis, depreciation models, breakeven analysis and the different investment evaluation methods.

Train the student on how to use the different evaluation methods for comparison between different alternatives and how to utilize the spreadsheet functions for performing economic calculations.

Enhance the student's understanding by applying the steps of the engineering economic analysis in a group project.

Description :

Introductory finance: time value of money, cash flow analysis, and Investment evaluation methods: present worth, annual worth and internal rate of return, Depreciation models and asset replacement analysis, the impact of inflation, taxation, uncertainty and risk on investment decisions.

Course outcomes :

a. Knowledge and Understanding: :

- 1 - Summarize the components and concepts of engineering economics.
- 2 - List solving techniques of engineering economic.
- 3 - Describe theorems for solving the problems of optimal economical cost function of projects

b. Intellectual Skills: :

- 1 - Express ideas in structural and mathematic terms so that quantities evaluation is facilitated
- 2 - Apply different alternative solutions
- 3 - Decide among different solution alternatives of depreciation models.
- 4 - Evaluate obtained results of present worth and capitalized cost calculations both individually or as a part of team

d.General and Transferable Skills: :

1 -	Write appropriate general economic reports in accordance with standard scientific guidelines.
2 -	Work in a self-directed manner.
3 -	. Work coherently and successfully as a part of a team.
4 -	Analyses general economic problems with innovative thinking of solutions.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
The general economic problem. Introduction to Engineering Economic analysis	4	2	2
Fixed charge, capital costs, annual operating costs and methods of economic selections Cash flow diagram Simple and compound interest Single cash flows Multiple cash flow series: Uniform, Gradient and geometric Factors for present, future and annuity worth Nominal and effective interest rates Continuous Compounding	8	8	8
Nominal and effective interest rates (cost of money) Methods for repaying the loans Equivalence and Indifference Variable interest rates Immediate and deferred payment of loans Present worth comparison of equal- life alternatives. Present worth comparison of different- life alternatives. Capitalized . cost calculations. Annual cost comparison of both equal- life and different- life alternatives.	4	2	2

Teaching And Learning Methodologies :

Lectures
Tutorials
Presentations of reports

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Final Written exam to assess the comprehensive understanding of the scientific background of the course, to assess the ability of problem solving with different techniques studied.	10.00		
Home reports, interactive discussions, and presentations	15.00	11	

Mid Term Exams to assess the skills of problem solving, understanding of related topics.

15.00

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Recommended books :

Essential books (text books)

William G. Sullivan, Elin M. Wicks C. Patrick, and Koelling, "Engineering economy-15th Fifteenth Edition, 2013.

Recommended books

R. Panneerselvam , " Engineering Economics-13th Thirteenth Printing Published by Asoke K. Ghosh, PHI Learning Private Limited, M-97, Connaught Circus, New Delhi-110001 and Printed by Meenakshi Art Printers, Delhi-11000, January, 2012