

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 - Explain the basic concepts of engineering economy as part of a decision making process.
- 2 - Interpret the different engineering economy factors.
- 3 - Identify the different methods for comparison of alternatives.
- 4 - Differentiate between investment alternatives and proposals
- 5 - Differentiate between the different depreciation models.
- 6 - Recognize the impact of the sensitivity analysis on comparison of alternatives.

b. Intellectual Skills: :

- 1 - Apply the basic concepts of engineering economy as part of a decision making process.

2 -	Develop investment alternatives & proposals for an engineering project.
3 -	Utilize spreadsheet functions to perform economic calculations.
4 -	Evaluate investment opportunities and compare between alternatives using single and combined engineering economic factors.
5 -	Perform breakeven analysis and sensitivity analysis under uncertainty conditions.

c. Professional and Practical Skills :

1 -	Select an engineering project with the required information about its economic data.
2 -	Apply engineering economic analysis on an engineering project
3 -	Prepare a project technical report.

d. General and Transferable Skills :

1 -	Search for cost and economic data for a new project
2 -	Work in a group project
3 -	Submit on time assignments and project.
4 -	Utilize spreadsheet functions for economic analysis of investment alternatives.
5 -	Conduct appropriately course project presentation using power point.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to Engineering Economic analysis Introduction to Engineering Economic analysis	2	2	0
Time Value of Money 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	12	8	4
Borrowing, Lending and investing	5	4	1
Planning Horizon and Minimum attractive rate of return	5	4	1
Comparison of Alternatives	9	6	3
Depreciation	3	2	1
Supplementary Analysis different- life alternatives.	3	2	1
Project Follow up	3	0	3
Project Presentations	3	2	1

Teaching And Learning Methodologies :

Interactive Lecturing
Problem solving
Discussion
Project
Presentation

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignment	5.00		
Final	40.00		
Mid- Exam 1I	15.00		
Mid- Exam I	15.00		
Participation	10.00		
Project	10.00		
Quizzes	5.00		

Recommended books :

Essential books (text books)

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

Recommended books

R. Panneerselvam , " Engineering Economics-13th 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