

Social Science Electives (Engineering Economics)

Course Code	Credit Hours
ECO-130	2-0

Course Description

Engineering economics emphasizes the systematic evaluation of the costs and benefits associated with proposed technical projects. The student will be exposed to the concepts of the “time value of money” and the methods of discounted cash flow. Students are prepared to make decisions regarding money as capital within a technological or engineering environment. This course is mainly concerned with economic analysis for engineering and managerial decision making by the use of techniques for evaluating the worth of prospective projects, investment opportunities and design choices.

Text Book:

1. Engineering Economy by Leland T. Blank, Anthony J. Tarquinii 7th edition .

Reference Book:

References Material (Books):

1. Fundamentals of Engineering Economics, 3rd ed., by Chan S. Park
2. Engineering Economy. Macmillan Publishing Company, New York .DeGarmo, E. Paul; Sullivan, G. William and Bontadelli, A. James.
3. Engineering Economic and Cost Analysis. Harper & Row, Publishers, New York. Collier, A. Courtland and Ledbetter, B. William.
4. Principles of Engineering Economic Analysis. John Wiley & Sons.White, A. John; Agee H. Marvin and Case, E. Kenneth.

Prerequisites

Nil

Assessment System for Theory

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

Teaching Plan

Theory:

Week	Topic Covered	Reading Assignment/ Homework/ Quiz	CLO No.	Assessment Methodology
1	Difference Between Finance, Accounting and Economics	Ref 1 Chapter 1	1	Assignments, Quizzes, MSE, ESE
	Foundations of Engineering Economy, introduction of the basic concepts and terminology			
	How Time and Interest Affect Money inflation and Deflation			
2	Interest rate and Equivalence	Ref 1 Chapter 1 Assignment 1	1	
	Types of Interests			
	Types of Funding			
	WACC and MARR			
	Re Payment Plans			
	Rule 72 and Opportunity Costs			
3	Cashflows and its types	Ref 1 Chapter 2 Quiz 1	2	
	Solving the Cashflows			
	Irregular Cashflows			

	Single Cashflow Projects			
4	Athematic Series	Ref 1 Chapter 2 Assignment 2	2	
	Geometric Series			
	Use of Factor Table			
	Finding the Missing Value			
5	Combining Factors	Ref 1 Chapter 3 Quiz 2	2	
	Shifted Series			
	Combination of Series			
	Shifted and Combination of Series			
6	Types of Interests	Ref 1 Chapter 4 Assignment 3	2	
	Nominal Interest Rates			
	Effective Interest Rates			
	Floating Interest Rates			
	Real interest rates			
7	Present Worth Analysis	Ref 1 Chapter 5 Quiz 3	2	
	Types of Alternatives			
	Use of MARR as a Discounting Factor			
	Evaluation of Complex Projects			
	Future Worth Analysis			
8	Annual Worth Analysis	Ref 1 Chapter 6 Assignment 4	2	
	LCM and Study Period Methods			
	Evaluation of Permanent Projects			
	Evaluation of Recurring and Non-Recurring Costs			
	Life Cycle Cost			
9	MSE			
10 &11	Interpretation of a Rate of Return Value	Ref 1 Chapter 7 Quiz 4	3	Assignments, Quizzes, MSE,
	Rate of Return Calculation Using a PW or AW Relation			

	Special Considerations When Using the ROR Method			ESE
	Multiple Rate of Return Values			
	Techniques to Remove Multiple Rates of Return			
12	Rate of Return Analysis: Multiple Alternatives	Ref 1 Chapter 8 Assignment 5	3	
	Why Incremental Analysis Is Necessary			
	Calculation of Incremental Cash Flows for ROR Analysis			
	Interpretation of Rate of Return on the Extra Investment			
	Rate of Return Evaluation Using PW: Incremental and Breakeven			
	Rate of Return Evaluation Using AW			
	Incremental ROR Analysis of Multiple Alternatives			
13	Public Sector Projects	Ref 1 Chapter 9 Quiz 5		
	Benefit t/Cost Analysis of a Single Project			
	Alternative Selection Using Incremental B/C Analysis			
	Incremental B/C Analysis of Multiple, Mutually Exclusive Alternatives			
	Service Sector Projects and Cost-Effectiveness Analysis			
	Service Sector Projects and Cost-Effectiveness Analysis			
14	Depreciation	Chapter 16 & 19	3	
	Risk and Uncertainty			
	Estimation of future events			
	Monte Carlo Simulation			
	Bayes Theorem			
	Import and Exports			

15	Taxes Income Tax and After Tax RoR Upgradation vs Replacement Design Life , Salvage Value	Ch 17	3	
16	Breakeven Analysis Taxes	Ref 1 Chapter 13	3	
	Sensitivity Analysis			
	Incremental Analysis based on Benefit-Cost Ratio			
17	ESE			

Practical: Nil.