Engineering Economics

Year: III **Semester: II**

Teaching Hours/week				Examination Scheme						Total Marks
				Internal		Final				
				Theory	Practical	Theory		Practical		
Cr	L	T	P			Duration	Marks	Duration	Marks	
3	3	2		40		3	60	-	-	100

Course Objective:

The objective of this course is to provide students the knowledge of the basic tools and methodology of economic studies for the evaluation of engineering project in private industry, in the public sector and in the utility areas.

Course Content:

1.0 Introduction **(3 hrs)**

1.1 Business and accounting terminology
1.2 Principles of Engineering Economics
1.3 Cash flow diagram
1.4 Economic systems

2.0 Cost Classification and Analysis (5 hrs)

2.1 The elements of cost
2.2 Classification of cost: overhead cost, prime cost
2.3 Cost variance analysis
2.4 Job and process costing

3.0 Interest and the Time Value of Money (6 hrs)

3.1 Introduction- Time value of money
3.2 Simple interest and compound interest
3.3 Factors and its types
3.4 Linear and geometric gradient series
3.5 Nominal and effective interest rates
3.6 Continuous compounding

4.0 Basic Methodologies of Engineering Economic Studies (7 hrs)

4.1 Minimum attractive rate of return
4.2 Present worth, Annual worth and Future worth method
4.3 Internal rate of return method and its drawbacks
4.4 External rate of return method
4.5 Cost/Benefit analysis
4.6 The payback (pay-out) period method

5.0 Investment Decisions: (8 hrs)

5.1 Comparison of alternatives having same useful life
5.2 Comparison of alternatives having different useful life
5.3 Comparison of alternatives using the capitalized worth method
5.4 Definition of mutually exclusive, contingent and independent investment alternatives in terms of combinations of projects

5.5 Comparison of mutually exclusive, contingent and independent alternative

6.0 Replacement analysis (5 hrs)

6.1 Introduction
6.2 Approaches of comparing defender and challenger
6.3 Economic service life of challenger and defender
6.4 Replacement analysis for long service life
  6.4.1 Required assumptions and decision framework
  6.4.2 Replacement analysis under Finite and Infinite Planning Horizon

7.0 Risk Analysis: (4 hrs)

7.1 Projects operating under conditions of certainty
7.2 Projects operating under conditions of uncertainty
7.3 Break even analysis
7.4 Decision tree
7.5 Sensitivity analysis

8.0 Taxation System and depreciation: (4 hrs)

8.1 Taxation law in Nepal
8.2 Value Added Tax (VAT)
8.3 Depreciation rates for buildings, equipment, furniture, etc
8.4 Methods of depreciation: Straight line, Declining balance, Sinking fund, Sum of year digit, MACRS methods of depreciation

9.0 Inflation: (3 hrs)

9.1 Introduction
9.2 Inflation measurement
9.3 Equivalence calculation under inflation
9.4 Impact of Inflation

References:

- E.P. DeGramo, W.G. Sullivan and J.A. Bontadelli, 8th Edition, Macmillan Publishing Company, 1988
- N.N. Borish and S.Kaplan, "Economic Analysis: For Engineering and Managerial Decision Making", McGraw-Hill.

Evaluation Scheme: Marks Division

Question Type	No. of Questions	Marks	Total Marks
Short	4	2	8
Medium	7	4	28
Long	3	8	24
Total			60