Engineering Economics
BEG495MS

Year: III   Semester: II

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal		Final		Total
3	1	-	Theory	Practical	Theory	Practical	100
			20	-	80	-	

Course Objectives

To provide the students a knowledge of the basic tools and methodology of economic studies for evaluation engineering project in private industry, in the public sector and in the utilities area.

1. **Introduction**   **2 hours**
   1.1 Definition and importance of engineering economics
   1.2 Business and accounting terminology
   1.3 Cash flow concept and representation
   1.4 Economic systems

2. **Cost Classification and Analysis**   **4 hours**
   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. **Interest and the Time Value of Money**   **6 hours**
   3.1 Simple interest, compound interest, interest tables, interest charts
   3.2 Present worth, Future worth and Annual worth
   3.3 Nominal and effective interest rates
   3.4 Continuous compounding and continuous compounding formula
   3.5 Interest calculations for uniform gradient

4. **Basic Methodology of Engineering Economic Studies**   **8 hours**
   4.1 Present worth, annual worth methods and future worth methods
   4.2 Internal rate of return method
   4.3 Drawbacks of the internal method
   4.4 External rate of return method
   4.5 Minimum attractive rate of return method
   4.6 The playback (pay-out) period method

5. **Cost/Benefit Analysis**   **4 hours**
   5.1 Conventional cost/benefit ratio
   5.2 Modified cost/benefit ratio
   5.3 Break-even analysis

6. **Investment Decisions**   **8 hours**
   6.1 Comparison of alternatives having some useful life
   6.2 Comparison of alternatives having different useful life
   6.3 Comparison of alternatives including of excluding the time value of money
   6.4 Comparison of alternatives using the capitalized worth method
   6.5 Definition of mutually exclusive investment alternatives in terms of combination of
       projects
   6.6 Comparison of mutually exclusive alternative

7. **Risk Analysis**   **4 hours**
   7.1 Projects operating under conditions of certainty
   7.2 Projects operating under conditions of uncertainty
   7.3 Decision tree
   7.4 Sensitivity analysis

8. **Depreciation and Taxation System in Nepal**   **4 hours**
   8.1 Depreciation concept and terminology
   8.2 Depreciation methods (St. line method, Declining B. method, sinking fund method,
       SOYD method, MACRS method)
   8.3 Taxes on normal gains
   8.4 Taxes on capital gains
   8.5 After tax cash flow analysis and estimate
   8.6 Taxation law in Nepal
   8.7 VAT

9. **Demand Analysis and Sales Forecasting**   **5 hours**
   9.1 Demand analysis
   9.2 Correlation of price and consumption rate
   9.3 Multiple correlation of price and consumption rate
   9.4 Market research techniques
   9.5 Sales forecasting

Tutorials:

- 3 Assignments. 2 Quizzes, 3 Case Studies

Note:

The case studies will concentrate on economic analysis and selection of public projects, economic analysis and selection of private projects, risk analysis and demand analysis.

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

Marking Schemes

Chapter	Hrs	Marks
1 &2	6	12
3 & 4	14	28
5	4	8
6	8	16
7	4	8
8 & 9	9	8
Total		80