



## GUJARAT TECHNOLOGICAL UNIVERSITY

**Bachelor of Engineering (Part Time)**

**Subject Code: 2920901**

**Semester-II**

**Subject Name: Economics for Engineers**

**Type of course:**

**Prerequisite: NA**

**Rationale:** Engineering economics is a field that addresses the dynamic environment of economic calculations and principles through the prism of engineering. It is a fundamental skill that all successful engineering firms employ in order to retain competitive advantage and market share. The subject endeavors to provide them with the tools to optimize profits, minimize costs, analyze various scenarios, forecast fluctuations in business cycles, and more.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
3	0	0	3	70	30	00	00	100

**Content:**

Sr. No.	Content	Total Hrs
1	<b>1. Economic Decisions Making</b> – Overview, Problems, Role, Decision making process. <b>2. Engineering Costs &amp; Estimation</b> – Fixed, Variable, Marginal & Average Costs, Sunk Costs, Opportunity Costs, Recurring And Nonrecurring Costs, Incremental Costs, Cash Costs vs Book Costs, Life-Cycle Costs; Types Of Estimate, Estimating Models - Per-Unit Model, Segmenting Model, Cost Indexes, Power-Sizing Model, Improvement & Learning Curve, Benefits. Case Study - Price and Income Elasticity of Demand in the real world	<b>08</b>
2	<b>3. Cash Flow, Interest and Equivalence:</b> Cash Flow – Diagrams, Categories & Computation, Time Value of Money, Debt repayment, Nominal & Effective Interest.	<b>08</b>
3	<b>4. Cash Flow &amp; Rate Of Return Analysis</b> – Calculations, Treatment of Salvage Value, Annual Cash Flow Analysis, Analysis Periods; Internal Rate Of Return, Calculating Rate of Return, Incremental Analysis; Best Alternative Choosing An Analysis Method, Future Worth Analysis, Benefit-Cost Ratio Analysis, Sensitivity And Breakeven Analysis. Economic Analysis In The Public Sector - Quantifying And Valuing Benefits & drawbacks. Case Study – Tata Motors	<b>08</b>



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4	<b>5. Inflation And Price Change</b> – Definition, Effects, Causes, Price Change with Indexes, Types of Index, Composite vs Commodity Indexes, Use of Price Indexes In Engineering Economic Analysis, Cash Flows that inflate at different Rates. Case Study – Competition in the Advertise Segment in India	08
5	<b>6. Present Worth Analysis:</b> End-Of-Year Convention, Viewpoint Of Economic Analysis Studies, Borrowed Money Viewpoint, Effect Of Inflation & Deflation, Taxes, Economic Criteria, Applying Present Worth Techniques, Multiple Alternatives.	08

#### Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
25	25	20	10	10	10

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)**

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

#### Reference Books:

1. James L.Riggs, David D. Bedworth, Sabah U. Randhawa : Economics for Engineers 4e , Tata McGraw-Hill
2. Donald Newnan, Ted Eschembach, Jerome Lavelle : Engineering Economics Analysis, OUP
3. John A. White, Kenneth E.Case, David B.Pratt : Principle of Engineering Economic Analysis, John Wiley
4. Sullivan and Wicks: Engineering Economy, Pearson
5. R.Paneer Seelvan: Engineering Economics, PHI
6. Michael R Lindeburg : Engineering Economics Analysis, Professional Pub

#### Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Describe the principles of economics that govern the operation of any organization under diverse market conditions	30
CO-2	Comprehend macroeconomic principles and decision making in diverse business set up	30
CO-3	Explain the Inflation & Price Change as well as Present Worth Analysis	30
CO-4	Apply the principles of economics through various case studies	10



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### **Suggested Resource Material for Assignments/Tutorials**

1. N.Gregory Mankiw, Principles of Economics, Thomson South Western , Pearson
2. H.L.Ahuja , Modern Economics , S.Chand & Company
3. C.Rangarajan and B.H.Dholakia, Principles of Macro Economics, The McGraw Hill
4. Dominick Salvatore, Managerial Economics: Principles and Worldwide Applications, Adapted by Ravikesh
5. Srivastava, Oxford University Press
6. List of Journals/Periodicals/Magazines/Newspapers: Economist, Indian Economic Review, Asian
7. Economic Review, American Economic Review, Economic and Political Weekly (EPW), Economic Times, Business Standard etc
8. Websites Recommended: [www.finmin.nic.in](http://www.finmin.nic.in) , [www.rbi.org.in](http://www.rbi.org.in) , [www.planningcommission.nic.in](http://www.planningcommission.nic.in)