GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Subject Code : ME03000171

Subject Name :Cost Management and Engineering Projects

w. e. f. Academic Year:	2024-25
Semester:	3
Category of the Course:	MOPEC

Prerequisite:	Zeal to learn the subject
Rationale:	This course provides a thorough understanding of the tools and models applied during the design, development, and support phases of a system to evaluate trade-offs between system performance and life-cycle costs.Students will gain insights into essential methods, processes, and tools for conducting economic analysis, cost estimation, and life-cycle management, particularly for complex engineering projects. The course introduces the core principles of engineering economy and simulation-based costing to support informed decision-making in economic evaluations.By the end of this course, students will be equipped to analyze and optimize system performance while effectively managing costs across the entire life cycle of a project.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
1	Attain knowledge in Cost Management process and Costing System.
2	Identify various types of Budgets involved in Cost Management process
3	Ability to Plan, Execution and control of the Project.
4	Evaluate project management techniques.
5	Illustrate Project scheduling, resource levelling, resource allocation and compression of the project.

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	0	3	70	30	00	00	100

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Introduction and Overview of the Strategic Cost Management Process Cost concepts in decision-making; relevant cost, Differential cost, Incremental cost and Opportunity cost. Objectives of a Costing System; Inventory valuation; Creation of a Database for operational control; Provision of data for Decision-Making.	06	14
2.	Cost Behavior and Profit Planning Marginal Costing; Distinction between Marginal Costing and Absorption Costing; Break-even Analysis, Cost-Volume-Profit Analysis. Various decision-making problems. Standard Costing and Variance Analysis. Pricing strategies: Pareto Analysis. Target costing, Life Cycle Costing. Costing of service sector. Just-in-time approach, Material Requirement Planning, Enterprise Resource Planning, Total Quality Management and Theory of constraints. Activity-Based Cost Management, Bench Marking; Balanced Score Card and Value-Chain Analysis.	08	20
3.	Budgetary Control; Flexible Budgets; Performance budgets; Zero-based budgets. Measurement of Divisional profitability pricing decisions including transfer pricing.	04	08
4.	Quantitative techniques for cost management: Linear Programming, Transportation problems, Assignment problems, Simulation, Learning Curve Theory.	06	14
5.	Engineering Project: Definition, Different types, why to manage, cost overruns centres, various stages of project execution: conception to commissioning. Project execution as conglomeration of technical and nontechnical activities. Detailed Engineering activities. Pre project execution main clearances and documents Project team: Role of each member. Importance Project site: Data required with significance. Project contracts. Types and contents. Project execution Project cost control. Bar charts and Project commissioning.	09	24
6.	Project Management:Network Scheduling, Critical Path Method, Program Evaluation & Review Technique, Planning and Scheduling of Activity Networks, Assumptions in PERT Modelling, Time-cost Trade-offs, Linear Programming and Network Flow Formulations, PERT/COST Accounting. Scheduling with limited resources, Resource Planning, Resource Allocation, Project Schedule Compression, Project Scheduling Software, Precedence Diagrams, Decision CPM, Generalized Activity Networks, GERT. Estimation of Project Costs, Earned Value Analysis, Monitoring Project Progress, Project Appraisal	10	20

	and Selection, Recent Trends in Project Management.		
	Total	**42**	**100**

* Topics must be taught during laboratory sessions

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**10**	**30**	**20**	**20**	**10**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Cost Accounting A Managerial Emphasis, Prentice Hall of India, New Delhi
2. Charles T. Horngren and George Foster, Advanced Management Accounting.
3. Robert S Kaplan Anthony A. Atkinson, Management & Cost Accounting
4. Ashish K. Bhattacharya, Principles & Practices of Cost Accounting A. H. Wheeler publisher
5. N.D. Vohra, Quantitative Techniques in Management, Tata McGraw Hill Book Co. Ltd.
6. Projects: Planning, Analysis, Selection, Implementation & Review, Prasanna Chandra, 5th Ed., 2002.
7. Project Management: A systems approach to planning and controlling, Harold Kerzner, CBS Publisher, New Delhi, 2nd Ed., 2000

(b) Open-source software and website:

Project Management software

Suggested Course Practical List:

As per the content of the course, Case studies and Mini Project for cost estimation and project management**.**

List of Laboratory/Learning Resources Required:

1. Suggested Project List:Case studies and Mini Project as per contents.

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