

# GUJARAT TECHNOLOGICAL UNIVERSITY

## MECHANICAL (INDUSTRIAL ENGINEERING) (46)

PROJECT MANAGEMENT AND PRACTICES

SUBJECT CODE: 3714604

SEMESTER: I

**Type of course:** Program Elective I

**Prerequisite:**

**Rationale:** The aim of the course is to familiarize students with the basic approaches of Project management. This subject helps students in preparation of budget, investment knowledge of project. This subject helps student in project scheduling, allocation of resources and controlling of different activities

**Teaching and Examination Scheme:**

| Teaching Scheme |   |   | Credits<br>C | Examination Marks |        |                 |        | Total<br>Marks |
|-----------------|---|---|--------------|-------------------|--------|-----------------|--------|----------------|
| L               | T | P |              | Theory Marks      |        | Practical Marks |        |                |
|                 |   |   |              | ESE(E)            | PA (M) | PA (V)          | PA (I) |                |
| 3               | 0 | 2 | 4            | 70                | 30     | 30              | 20     | 150            |

**Content:**

| Sr. No. | Content   | Total Hrs | % Weightage |
|---------|---|-----------|-------------|
| 1       | <b>Introduction:</b> Concept of a Project, Difference between Project Management and General Management, Life Cycles of Projects, Project Formulation Approach, Different Project Organizations Project Manager (Essentials and Responsibilities), Project Team.  | 4         | 10          |
| 2       | <b>Planning and Budgeting the Project:</b> Contents of a Project Plan, The Planning Process, Work Breakdown Structure and Other Tools, Types of Budgeting (Top- Down and Bottom-Up), Cost Estimating, Risk Management.  | 6         | 12          |
| 3       | <b>Investment Appraisal:</b> Social Cost Benefit Analysis, UNIDO Approach, Net Benefit in Terms of Economic Prices, Measurement of Impact on Distribution, Savings Impact and its Value, Income Distribution Impact, Adjustment For Merit and Demerit, Goods Little Mirrless Approach, Shadow Prices, Financial and Economic Appraisal of Single Project, Multiple Projects and Constraints, Method of Ranking – Mathematical Programming Approach – LP, ILP and Goal Programming Model. Project Cash Flows –Investment Criteria- Net Present Value, Cost Benefit Ratio, Internal Rate Of Return, Pay Back Period, Accounting Rate of Return. | 8         | 18          |
| 4       | <b>Project Scheduling and Resource Allocation:</b> PERT and CPM Networks (Different Analysis), Project Uncertainty and Risk Management, Resource Loading/Leveling, Allocating Scarce Resources to Projects, Complexity of Project Scheduling With Limited Resources, Leveling The Demands on Key Resources, A Simple Heuristic Program for Resource Allocation, Time-Cost Trade Off Procedure: Schedule Related Project Costs, Lowest Cost Schedule. Goldratt's Critical Chain Approach.  | 10        | 24          |

|   |  |    |     |
|---|--|----|-----|
| 5 | <b>Monitoring and Controlling the Project:</b> Designing the Monitoring and Controlling System, Data Collection and Reporting, Earned Value, Types of Control.   | 4  | 10  |
| 6 | <b>Evaluation and Termination of Project:</b> Evaluation Criteria and Measurement, Project Auditing, Project Termination Requirements and Procedures.  | 4  | 10  |
| 7 | <b>Project Quality Management:</b> Project and Product Quality Differences, Selection and Application of Different Quality Engineering and Management Tools and Techniques at Different Phases of Project Management – Planning, Controlling and Assuring Project Quality. | 6  | 16  |
|   | <b>Total</b>   | 42 | 100 |

### Reference Books:

1. Project Management Core Textbook, Samuel J. Mantel, Jr., Jack R. Meredith, Scott M. Shafer, Margaret M. Sutton, M. R. Gopalan, Wiley ± India (P) Ltd.
2. Projects Planning, Implementation and Control, Prasanna Chandra, Tata McGraw-Hill Publishing Company Ltd., New Delhi.
3. A Management Guide to PERT/CPM, Jerome, D. Weist and Ferdinand K. Levy, Prentice Hall of India, New Delhi.
4. Project Management and Control, NarendraSingh, Himalaya Publishing House.
5. Project Management with CPM and PERT, Moder J.V. and Phillips, C.R.E. Van Nostrand Reinhold Company.
6. Operations Research: Principles and Practice, Ravindran, A. Phillips, Don T. and Solberg, Janes J. Second edition, John Wiley & Sons
7. Project Management, Choudhury, S., Tata McGraw Hill.

### Course Outcome:

After learning the course the students should be able to:

Demonstrate project and different activities

- 1) Demonstrate project scheduling and controlling
- 2) Demonstrate resource allocation, leveling and crashing of project
- 3) Describe quality management in project

### List of Experiments:

- 1) Exercise on PERT/CPM
- 2) Exercise on Project Budgeting
- 3) Exercise on Investment planning of Project
- 4) Exercise on project scheduling
- 5) Exercise on Resource leveling and allocation
- 6) Exercise on monitoring and controlling of project
- 7) Exercise on quality management application on project management

### Major Equipments:

MS Project