HSOE4004 PROJECT MANAGEMENT (3-0-0)

Course Objectives : The course aims to:

1. Introduce students to the fundamental concepts, tools, and techniques of project management.
2. Develop understanding of project life cycle and project planning methodologies.
3. Equip students with skills in project scheduling, cost estimation, and risk management.
4. Familiarize students with project monitoring, control mechanisms, and quality management.
5. Enable students to apply project management principles in engineering, IT, infrastructure, and startup environments.

Module I: Introduction to Project Management (9 Hours)

Meaning and Characteristics of a Project, Project vs. Operations, Project Management: Definition and Importance, Project Life Cycle, Role and Responsibilities of Project Manager, Project Selection and Feasibility Analysis (Technical, Financial, Market), Project Organization Structures (Functional, Matrix, Projectized), Introduction to Project Management Software (MS Project/Primavera)

Module II: Project Planning and Scheduling (9 Hours)

Work Breakdown Structure (WBS), Project Scope Management, Time Management in Projects, Network Diagrams (AOA & AON), Critical Path Method (CPM)

Program Evaluation and Review Technique (PERT), Gantt Charts, Resource Allocation and Resource Leveling (Basic Concepts)

Module III: Project Cost, Risk, and Quality Management (9 Hours)

Project Cost Estimation Techniques, Budgeting and Cost Control, Earned Value Analysis (Basic Concepts)

Risk Management Process: Risk Identification, Risk Analysis, Risk Response Strategies.

Quality Management in Projects, Introduction to Six Sigma and Lean Concepts

Module IV: Project Execution, Monitoring, and Contemporary Practices (9 Hours)

Project Execution and Team Management, Leadership and Communication in Projects, Project Monitoring and Control, Performance Measurement and Reporting, Project Closure and Post-Implementation Review, Agile Project Management (Overview), Project Management in IT, Construction, and Startup Ecosystems, Sustainability and Ethical Issues in Project Management

Course Outcomes (COs) : After successful completion of the course, students will be able to:

CO-1: Explain the fundamental concepts, project life cycle stages, and organizational structures in project management.

CO-2: Apply tools such as WBS, CPM, PERT, and Gantt charts for effective project planning and scheduling.

CO-3: Analyze project cost, time, and risk factors to evaluate project feasibility and performance.

CO-4: Evaluate project performance using earned value analysis and risk management techniques.

CO-5: Develop a basic project plan incorporating scope, schedule, cost, and risk considerations for engineering applications.

Textbooks

1. K.K. Chitkara, Project Management: Planning, Scheduling and Controlling, Tata McGraw-Hill Education.
2. Prasanna Chandra, Projects: Planning, Analysis, Selection, Financing, Implementation and Review, McGraw-Hill Education (India).
3. K. Nagarajan, Project Management, New Age International Publishers.

Reference Books

1. Harold Kerzner, Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Wiley India.
2. Clifford F. Gray & Erik W. Larson, Project Management: The Managerial Process, McGraw-Hill Education.
3. Pinto, Jeffrey K., Project Management: Achieving Competitive Advantage, Pearson India.
4. PMI, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Project Management Institute.
5. Vasant Desai, Project Management, Himalaya Publishing House.