2. Kaul, Vijay kumar, Management- Text and Cases, Vikas Publishing, New Delhi, 2015.
3. Stoner and Wankel: Management

DSE – 16
Software Project Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Software Project Management	**4**	**3**	**0**	**1**	**Class XII pass with Mathematics**	**NIL**

Learning Objectives:

1. To use multiple techniques to estimate software tasks, projects and products.
2. To define, implement, analyze and use the metrics required to manage a software project.
3. To describe the strengths and weaknesses of software estimation and metrics techniques.

Learning Outcomes:

1. Apply project management concepts and techniques to an IT project.
2. Identify issues that could lead to IT project success or failure.
3. Explain project management in terms of the software development process.
4. Apply project management concepts through working in a group as team leader or active team member on an IT project

UNIT-I **(7 Hours)**

Introduction and Software Project Planning: Fundamentals of Software Project Management (SPM), Need Identification, Vision and Scope document, Project Management Cycle, SPM Objectives, Management Spectrum, SPM Framework, Software Project Planning, Planning Objectives, Project Plan, Types of project plan, Structure of a Software Project Management Plan, Software project estimation, Estimation methods, Estimation models, Decision process.

UNIT-II **(8 Hours)**

Project Organization and Scheduling Project Elements: Work Breakdown Structure (WBS), Types of WBS, Functions, Activities and Tasks, Project Life Cycle and Product Life Cycle, Ways to Organize Personnel, Project schedule, Scheduling Objectives, Building the project schedule, Scheduling terminology and techniques, Network Diagrams: PERT, CPM, Bar Charts: Milestone Charts, Gantt Charts. (SPI), Interpretation of Earned Value Indicators, Error Tracking, Software Reviews, Types of Review: Inspections, Deskchecks, Walkthroughs, Code Reviews, Pair Programming.

UNIT-III **(15 Hours)**

Project Monitoring ,Control and Management: Dimensions of Project Monitoring & Control, Earned Value Analysis, Earned Value Indicators: Budgeted Cost for Work Scheduled (BCWS), Cost Variance (CV), Schedule Variance (SV), Cost Performance Index (CPI), Schedule Performance Index (SPI), Interpretation of Earned Value Indicators, Error Tracking, Software Reviews, Types of Review: Inspections, Deskchecks, Walkthroughs, Code Reviews, Pair Programming. Risk Management. Tools: CASE Tools, Planning and Scheduling Tools, MS-Project. Software Configuration Items and tasks, Baselines, Plan for Change, Change Control, Change Requests Management, Version Control.

UNIT-IV **(15 Hours)**

Software Quality Assurance and Testing Objectives: Testing Principles, Test Plans, Test Cases, Types of Testing, Levels of Testing, Test Strategies, Program Correctness, Program Verification & validation, Testing Automation & Testing Tools, Concept of Software Quality, Software Quality Attributes, Software Quality Metrics and Indicators, The SEI Capability Maturity Model CMM), SQA Activities, Formal SQA Approaches: Proof of correctness, Statistical quality assurance, Cleanroom process.

References:

1. M. Cotterell, Software Project Management, Tata McGraw-Hill Publication.
2. Royce, Software Project Management, Pearson Education
3. Kieron Conway, Software Project Management, Dreamtech Press
4. S. A. Kelkar, Software Project Management, PHI Publication.
5. Harold R. Kerzner, Project Mangment "A Systems Approach to Planning, Scheduling, and Controlling" Wiley.
6. Mohapatra, Software Project Management, Cengage Learning.
7. P.K. Agarwal, SAM R., Software Project Management, Khanna Publishing House

Practicals:

1. Prepare a vision and scope document for a small software project (e.g., Online Food Ordering System) including business need, stakeholders, objectives, and deliverables.
2. Use the basic COCOMO model to calculate effort and development time for a project based on KLOC (e.g., 3 KLOC). (using Excel or online tools.)
3. Create a WBS for any software project using a hierarchical format in draw.io or MS Word. Include at least 3 levels (Phase → Task → Subtask).
4. List project tasks with start dates, durations, and dependencies, then create a Gantt chart to show scheduling and timelines.
5. Using sample data (BCWS, ACWP, BCWP), calculate CV, SV, CPI, and SPI in Excel, and interpret whether the project is on time/on budget.