

UNIT I**Introduction**

Introduction to Software Engineering, Software Components, Software Characteristics, Software Engineering Processes, Software Quality Attributes, Various Software Development Life Cycle (SDLC) Models.

UNIT II**Software Requirement Specifications (SRS) and Software Project Management**

System Analysis, Feasibility Study (Technical, Economical, Operational), Fact-finding Techniques (Interview, Questionnaire, Record Scanning, Observation), Specification Tools (Decision Tree, Decision Table, Data Flow Diagram of various levels, Data Dictionary, Structured English) SRS Document, IEEE Standards for SRS, Project Cost Estimation, Project Scheduling, Gantt Chart, PERT(Program Evaluation and Review Technique), CPM(Critical Path Method)

UNIT III**Software Design**

Design Objectives, Input Design, Output Design, UI Design, Architecture and Component Level Design, File Organization, Database Design, Input Validation, Backup and Recovery Design. Low Level Design: Modularization, Design Structure Charts, Pseudo Codes, Flow Charts, Coupling and Cohesion Measures. Design Strategies: Function Oriented Design, Object Oriented Design, Top-Down and Bottom-Up Design. Software Measurement and Metrics: Various Size Oriented Measures: Function Point (FP) Based Measures, Cyclomatic Complexity Measures: Control Flow Graphs.

UNIT IV**Software Reliability and Software Testing**

Software Reliability: Concept of Software Reliability, Reliability Models, Limitations of Reliability Models. Software as an Evolutionary Entity, Need for Maintenance, Categories of Maintenance: Preventive, Corrective and Perfective Maintenance, Cost of Maintenance, Software Reengineering, Reverse Engineering. Software Configuration Management Activities, Change Control Process, Software Version Control, Software Licensing (Proprietary v/s. Free and Open Source Software), An Overview of CASE Tools.

Software Testing: Testing Fundamentals, Manual and Automated Testing, Blackbox and Whitebox Testing, Functional Testing, Structural Testing, Test Plan activities, unit testing, integration Testing. Software Configuration Management Activities, Change Control Process, Software Version Control, An Overview of CASE Tools.

UNIT V**CASE STUDY**

Examples

- Hotel Automation System
- Book Shop Automation Software
- Word processing Software

- Software Component Cataloguing Software.
- Payroll System
- Banking System
- Purchase Order System
- Library Management System
- Railway Reservation System
- Bill Tracking System
- College Admission System

Reference Book(s)

1. R. S. Pressman, Software Engineering: A Practitioners Approach, McGraw Hill.
2. Rajib Mall, Fundamentals of Software Engineering, PHI Publication.
3. K. K. Aggarwal and Yogesh Singh, Software Engineering, New Age International Publishers.
4. Carlo Ghezzi, M. Jarayeri, D. Manodrioli, Fundamentals of Software Engineering, PHI Publication.
5. Ian Sommerville, Software Engineering, Addison Wesley.