BCA420C2: SOFTWARE ENGINEERING

CREDITS: THEORY: 4; PRACTICAL: 2
MAX. MARKS: THEORY: 60; PRACTICAL: 30
MIN. MARKS: THEORY: 24; PRACTICAL: 12

THEORY: 60 LECTURES

UNIT-I

1. **INTRODUCTION**   **(7 LECTURES)**

   The Evolving Role of Software, Software Characteristics, Changing Nature of Software, Software Engineering as a Layered Technology, Software Process Framework, Framework and Umbrella Activities, Process Models, Capability Maturity Model Integration (CMMI).

2. **REQUIREMENT ANALYSIS**   **(8 LECTURES)**

   Software Requirement Analysis, Initiating Requirement Engineering Process, Requirement Analysis and Modeling Techniques, Flow Oriented Modeling, Need for SRS, Characteristics and Components of SRS.

UNIT-II

3. **SOFTWARE PROJECT MANAGEMENT**   **(7 LECTURES)**

   Estimation in Project Planning Process, Project Scheduling.

4. **Risk Management**   **(8 Lectures)**

   Software Risks, Risk Identification, Risk Projection and Risk Refinement, RMMM Plan.

UNIT-III

5. **QUALITY MANAGEMENT**   **(7 LECTURES)**

   Quality Concepts, Software Quality Assurance, Software Reviews, Metrics for Process and Projects.

6. **DESIGN ENGINEERING**   **(8 LECTURES)**

   Design Concepts, Architectural Design Elements, Software Architecture, Data Design at the Architectural Level and Component Level, Mapping of Data Flow into Software Architecture, Modeling Component Level Design.

UNIT-IV

7. **TESTING STRATEGIES & TACTICS**   **(15 LECTURES)**

   Software Testing Fundamentals, Strategic Approach to Software Testing, Test Strategies for Conventional Software, Validation Testing, System testing,

   Black-Box Testing, White-Box Testing and their type, Basis Path Testing.

RECOMMENDED BOOKS:

1. R.S. Pressman, Software Engineering: A Practitioner's Approach (7th Edition), McGraw- Hill, 2009.
2. P. Jalote, An Integrated Approach to Software Engineering (2nd Edition), Narosa Publishing House, 2003.
3. K.K. Aggarwal and Y. Singh, Software Engineering (2nd Edition), New Age International Publishers, 2008.
4. I. Sommerville, Software Engineering (8th edition), Addison Wesley, 2006.
5. D. Bell, Software Engineering for Students (4th Edition), Addison-Wesley, 2005.
6. R. Mall, Fundamentals of Software Engineering (2nd Edition), Prentice-Hall of India, 2004.

LAB: SOFTWARE ENGINEERING   **(CREDITS: 2 LAB: 60 LECTURES)**

S. No   **PRACTICAL TITLE**

1.   **Problem Statement,**

  - Process Model

2.   **Requirement Analysis:**

  - Creating a Data Flow

  - Data Dictionary, Use Cases

3.   **Project Management:**

  - Computing FP

  - Effort

  - Schedule, Risk Table, Timeline chart

4.   **Design Engineering:**

  - Architectural Design

  - Data Design, Component Level Design

5.   **Testing:**

  - Basis Path Testing

Sample Projects:

1. **Criminal Record Management:** Implement a criminal record management system for jailers, police officers and CBI officers

2. **DTC Route Information:** Online information about the bus routes and their frequency and fares

3. **Car Pooling:** To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively.

4. Patient Appointment and Prescription Management System

5. Organized Retail Shopping Management Software

6. Online Hotel Reservation Service System

7. Examination and Result computation system

8. Automatic Internal Assessment System

9. Parking Allocation System

10. Wholesale Management System