RAMAKRISHNA MISSION VIDYAMANDIRA

CBCS Syllabus B.Sc. Computer Science Honours

Semester-IV

Course Code: CMSA CC 9 Credit: 6
Course Type: Core Course

Course Outcome:

i) Apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.

ii) Demonstrate an ability to use the techniques and tools necessary for engineering practice.

iii) Develop understanding of current theories, models, and techniques that provide a basis for the software lifecycle.

iv) Skill enhancement in application software development for Windows platform using Visual Studio.

v) Understanding integration of front end and backend of application software development.

CMSA CC 9 T: Software Engineering

Credit: 4 **Marks: 50**

Introduction: Defining system, open and closed system, modeling of system through computer hardware, communication systems, external agents and software systems; Importance of Engineering Methodology towards computerization of a system. [3 L]

Software Life Cycle Models: Classical and Iterative Waterfall Model, Spiral Model, Prototyping Model, Evolutionary Model, Agile Model and their importance towards application for different system representations, Comparative Studies. [8 L]

Software Project Management: Project planning; Matrices for project size estimation: LOC, Function Point Metric; Heuristic and Empirical Modeling; COCOMO; Scheduling: Gantt chart, PERT chart; Analytical technique: Halstead's Software Science. [10 L]

Requirement Analysis and Specification: Requirements Principles and its analysis; Specification Principles and its representations; Need for SRS, Characteristics and components of SRS. [7 L]

Software Design: Cohesion and coupling; Function oriented design: Different levels of DFD Design, Physical and Logical DFD; Process Representation: Pseudo English, Tight English; Decision Tables and Trees, Structured analysis: Structure Chart Conversion from DFD; Object oriented design approach basics. [10 L]

Object Modeling: UML Overview; Use case model; Class diagram, Interaction diagram, State transition diagram; Activity diagram. [5 L]

Software Testing: Software Verification and Validation; Testing objectives, Testing Principles, Testability; Error and Faults; Unit Testing, White Box and Black Box Testing, Test Case Design: Test Vector, Test Stub. [10 L]

Software Quality Assurances: Concepts of Quality, Quality Control, Quality Assurance, SQA Activities, IEEE Standard for Statistical Software Quality Assurances (SSQA) criterions; Capability Maturity Model Integration. [7 L]

CMSA CC 9 P: Visual Programming Laboratory

Credit: 2 **Marks: 25**

Introduction to .NET framework: Event Driven Programming, NET as Programming Platform, .NET Framework version, .NET Architecture, The Just-In-Time Compiler, .NET Framework class library, Introduction to MVC 4.

C#.NET Development Environment: Creating Applications, Building Projects, Using simple components, Running C#.NET applications, Data, Operators, Conditionals and Loops, Procedures, Error Handling.

Windows Applications in C#.NET: Windows Forms, Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons, List Boxes, Combo Boxes, Picture Boxes, Scrollbars, Splitters, Timer Menus, Built-in Dialogs, Image List, Toolbars, Status Bar and Progress bars.

Object Oriented Programming in C#.NET; Attributes, Delegates and events; File handling; Databases in C# .NET; Exception Handling; XML. [40 L]

Recommended Books:

1. Fundamentals of Software Engineering by Rajib Mall, 3rd Edition; PHI.
2. An Integrated Approach to Software Engineering by Pankaj Jalote, 3rd Edition; Narosa.
3. Software Engineering by Pressman, 6th Edition; McGrawHill.
4. Software Engineering by Ian Sommerville, 6th Edition; McGrawHill.
5. The Unified Modeling Language User Guide, 2nd Edition; Pearson.
6. Beginning Visual C# 2015 Programming by Benjamin Perkins; Wrox.
7. Microsoft Visual C# Step by Step by Sharpe John, 8th Edition; PHI.
