MSCS203 SOFTWARE ENGINEERING AND OOAD (3-0-0)

Module I: 8 Hours

Introduction to Software Engineering: Evolution and Emergence of Software Engineering; Software Life Cycle Models: Classical Waterfall Model, Iterative Waterfall Model, V-Model, Prototyping Model, Incremental Development Model, Evolutionary Model, RAD model, Agile development models & Spiral model.

Module II: 12 Hours

Software Project Management: Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, COCOMO model, Halstead's Software Science, Scheduling, Staffing, Risk Management; Requirements Analysis & Specification: Requirements Gathering and Analysis, SRS, Formal System Specification.

Software Design: Overview of the Design Process, Cohesion and Coupling, Layered Arrangement of Modules, Approaches to Software Design; FOD: SA/SD Methodology, DFD, Structured Design and Detailed Design.

Module III: 8 Hours

Object Modelling Using UML: Object-Orientation Concepts, Unified Modelling Language (UML); UML Models: Use Case Model, Class Diagram, Interaction Diagrams, Activity Diagram, State Chart Diagram, Package, Component and Deployment Diagrams; Object-Oriented Software Development: OOAD Methodology.

Module IV: 8 Hours

Coding & Code Review; Testing: Basic Concepts, Black-box and White-box Testing, Debugging, Unit Testing and System Testing, Testing Object-Oriented Programs, Software Reliability, Software Quality, QMS, SEI CMM, Six Sigma; CASE, Software Maintenance, Emerging Trends.

Text Books:

1. R. Mall, Fundamentals of Software Engineering, 5th Edition, PHI Learning, 2021.
2. R. S. Pressman, Software Engineering - A Practitioner's Approach, 8th Edition, McGraw Hill Education, 2022.

Reference Books:

1. I. Somerville, Software Engineering, 10th Edition, Pearson Education, 2023.
2. C. Larman, Applying UML and Patterns, 3rd Edition, Pearson Education, 2016.