MCA 403 Object Oriented Software Engineering

Module 1 (10 Hours)

Software Process Models:

Software Product, Software crisis, Handling complexity through Abstraction and Decomposition, Overview of software development activities, Process Models, Classical waterfall model, iterative waterfall model, prototyping mode, evolutionary model, spiral model, RAD model, Agile models: Extreme Programming.

Module 2 (10 Hours)

Software Requirements Engineering:

Requirement Gathering and Analysis, Functional and Non-functional requirements, Software Requirement Specification (SRS), IEEE 830 guidelines, Decision tables and trees.

Software Project Management:

Responsibilities of a Software project manager, project planning, Metrics for project size estimation, Project estimation techniques, Empirical estimation techniques, COCOMO models, Scheduling, Organization &team structure, Staffing, Risk management, Software configuration management.

Module 3 (10 Hours)

Structured Analysis & Design:

Overview of design process: High-level and detailed design, Cohesion and coupling, Modularity and layering, Function–Oriented software design: Structured Analysis using DFD Structured Design using Structure Chart, Basic concepts of Object Oriented Analysis & Design. User interface design, Command language, menu and iconic interfaces.

Coding and Software Testing Techniques:

Coding, Code Review, documentation. Testing: - Unit testing, Black-box Testing, White- box testing, Cyclomatic complexity measure, coverage analysis, mutation testing, Debugging techniques, Integration testing, System testing, Regression testing.

Module 4 (10 Hours)

Software Reliability and Software Maintenance:

Basic concepts in software reliability, reliability measures, reliability growth modeling, Quality SEI CMM, Characteristics of software maintenance, software reverse engineering, software reengineering, software reuse.

Emerging Topics:

Client-Server Software Engineering, Service-oriented Architecture (SOA), Software as a Service (SaaS).

Module 5 (6 Hours)

(as per choice of faculty)

Portion covered can be tested through Internal evaluation only not to be included in University examination)

Text Books:

1. Fundamentals of Software Engineering, Rajib Mall, PHI, 2014.

2. Software Engineering, A Practitioner"s Approach, Roger S. Pressman, TMG Hill.

Reference Books:

1. Software Engineering, I. Somerville, 9th Ed. , Pearson Education.