Software Engineering - Syllabus

SECTION-A

Introduction: Introduction to Software Engineering, System Engineering Vs Software Engineering, Software Evolution, Software Characteristics, Cost of Software Production, Software Components, Crisis - Problem and Causes, Challenges in Software Engineering.

Software Process Models: SDLC, Waterfall Model, Incremental Model, Prototyping Model, Evolutionary Model, Spiral Model, Rapid Application Development Model, Rational Unified Process Model, Agile Methods, Xtreme programming, SEI Capability Maturity Model.

Software Requirements Analysis and Specification Concepts: Requirement Engineering, Requirement Elicitation Techniques, Requirements Documentation, Characteristics and Organization of SRS

Software Analysis and Design: Design Principles, Design issues and Approaches, Abstraction, modularity, Coupling, Cohesion, Structured Analysis and Design, DFD, Object oriented Design, Data Design, Architectural design, Interface Design, Component Level Design, Object Oriented Design Concepts, Structured vs. Object Oriented Analysis.

SECTION-B

Project Management Concepts: Management Activities, Project Planning, Project Scheduling, Size Estimation - LOC, FP; Cost Estimation Models -COCOMO, COCOMO-II.

Coding & Testing: Coding, Coding Standards, Coding Conventions, Programming Style, Verification and Validation, Testing Process, Design of Test Cases, Software Testing Strategies, Unit Testing, Integration Testing, Top Down and Bottom-Up Integration Testing, Alpha & Beta Testing, System Testing and Debugging.

Technical Metrics for Software: Software Measurements: What and Why, A Framework for Technical Software Metrics, Metrics for the Analysis Model, Metrics for Design Model, Metrics for Source Code, Metrics for Testing, Metrics for Software Quality, Metrics for Maintenance.

CASE (Computer Aided Software Engineering) and Introduction to UML: CASE and its Scope, building blocks of CASE, CASE Tools, CASE Environment, UML Concepts, Use Case Diagrams, Sequence Diagrams, Collaboration Diagrams, Class Diagram, State Transition Diagrams, Component and Deployment Diagrams.