

# SOFTWARE ENGINEERING

## Module –I (Lecture Hour 12)

**Process Models:** Software Processes, Software Development Life Cycle Models, Waterfall Model, 'V' Model, Prototyping Model, The Iterative Waterfall Model, The Spiral Model

**Software Requirement Engineering:** Requirement Engineering Process, Requirement Inception, Identification of Stakeholders, Requirement, Requirement Elaboration: User Requirements, Initial Technical Requirements, Final Functional Requirements, Negotiation, Requirement

**Structured Analysis & Design:** Introduction to Structured Analysis, Data Flow Diagram, Process Specification, Entity Relationship Model, Structured Design Methodologies: Coupling and Cohesion, Structure Chart, Mapping DFD into Structure Chart

## Module –II (Lecture Hour 12)

**Object Oriented Concepts & Principles:** Key OO Concepts: Object, Class, Message, Inheritance, Abstraction, Encapsulation, Polymorphism, Relationships: Is-A Relationship, Has-A Relationship, Uses-A Relationship

**Modelling Techniques:** Booch OO Design Model, Rumbaugh's Object Modelling Technique, Jacobson's model, The Unified Approach to Modelling, Unified Modelling Language

**Object Oriented Analysis & Design:** Use-Case Modelling, Use-Case Realization,

Types of Classes: Class Classification Approaches: Noun Phrase Approach, CRC Card Approach, Use-case Driven Approach

Identification of Classes, Relationship, Attributes and Method

System Context and Architectural Design, Defining System Boundary, Identification of Subsystems, Principles of Class Design, Types of Design Classes

UML diagrams: Class diagram, Object diagram, Activity diagram, State diagram, Interaction diagrams, Sequence diagram, Collaboration Diagram, Component Diagram, Deployment Diagram, Patterns

## Module –III (Lecture Hour 11)

**Software Testing:** Testing Fundamentals, Verification & Validation, Black Box Testing, White Box Testing, Unit Testing, Integration Testing, Object Oriented Testing, System Testing, Usability Testing

**Software Metrics-** Software Metrics and its Classification, Software Size Metrics: LOC Metrics, Function Point Metrics, Feature Point Metrics, Bang Metrics, Halstead's Metrics Quality Metrics, Process Metrics, Design Metrics: High Level Design Metrics, Component Level Design Metrics

Object Oriented Metrics: CK Metrics Suite, Metrics for Object Oriented Design (MOOD) Project Estimation Techniques, COCOMO Model: Basic COCOMO Model, Intermediate COCOMO model, Complete COCOMO model, COCOMO II

**Web Engineering:** General Web Characteristics, Emergence of Web Engineering, Web Engineering Process, Web Design Principles, Web Metrics

Textbooks

#### **TEXTBOOKS**

1. Software Engineering, Roger S Pressman, TMH
2. Fundamentals of Software Engineering, Rajib Mall, PHI

#### **Reference Books**

1. Software Engineering, Sommerville, Pearson
2. Software Engineering Fundamentals, Behforooz & Hudson, Oxford