

## Object Oriented Software Engineering

Semester V

Subject Code: BS51706

Lectures: 60

### Objectives:

The syllabus aims in equipping students with,

- Understanding importance of Object Orientation in Software engineering
- Understand the components of Unified Modeling Language
- Understand techniques and diagrams related to structural modeling and behavioral modeling
- Understand techniques of Object Oriented analysis, design and testing

### Unit 1: Object Oriented Concepts , Analysis ,Design and UML

14

#### Object Oriented System Development

- Introduction
- Introduction to Object, Classes and Instance, Polymorphism, Inheritance
- Function/Data Methods (With Visibility)
- Object Oriented Analysis
- Object Oriented Construction
- Elements of an Object Model
  - Identifying the Elements of an Object Model
  - Identifying Classes and Objects
  - Specifying the Attributes (With Visibility)
  - Defining Operations
  - Finalizing the Object Definition



### Object Oriented Analysis

- Iterative development and the Rational Unified Process
- Inception
- Understanding Requirements
- Use Case Model From Inception to Elaboration
- Elaboration

### Object Oriented Design

- The Generic Components of the OO Design Model
- The System Design Process - Partitioning the Analysis Model, Concurrency and Sub System Allocation, Task Management Component, The Data Management Component, The Resource Management Component, Inter Sub System Communication

### Introduction to UML

- Concept of UML
- Advantages of UML

## Unit 2: Use case and structural modelling

16

### Use Cases

- Use Cases and notifications used in use case diagram
- Formal Use Cases
- Use Case Diagram with stereo types (Minimum three examples should be covered)

### Basic Structural Modeling

- Classes
- Relationship
- Common Mechanism
- Class Diagram (Minimum three examples should be covered)

### Advanced Structural Modeling

- Advanced Classes
- Advanced Relationship
- Interface
- Types and Roles
- Packages
- Object Diagram (Minimum three examples should be covered)



**Unit 3: Basic Behavioral Modeling and Architectural modeling**

14

**Basic Behavioral Modeling**

- Interactions
- Interaction Diagram (Minimum two examples should be covered)
- Sequence Diagram (Minimum two examples should be covered)
- Activity Diagram (Minimum two examples should be covered)
- State Chart Diagram (Minimum two examples should be covered)

**Architectural modeling**

- Component
- Components Diagram (Minimum two examples should be covered)
- Deployment Diagram (Minimum two examples should be covered)
- Collaboration Diagram (Minimum two examples should be covered)

**Unit 4: Object Oriented Testing**

4

**Object Oriented Testing**

- Object Oriented Testing Strategies
- Test Case Design for Object Oriented Software
- Inter Class Test Case Design

**Reference Books:**

1. Grady Booch, James Rumbaugh, *The Unified Modeling Language User/Reference Guide*, Pearson Education INC
2. Ivar Jacobson, *Object Oriented Software Engineering*, Pearson Education INC
3. Craig Larman, *Applying UML and Patterns*, Pearson Education INC
4. Bennett, Simon, *Object Oriented Analysis and Design*, McGraw Hill

