

## OBJECT ORIENTED ANALYSIS & DESIGN

(Professional Elective-III) / (Common to CSE & IT)

**Course Code: 15CT1125**

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### Pre-requisites:

Software Engineering, any Object-Oriented Programming Language.

### Course Outcomes :

At the end of the Course, the Student will be able to:

- CO 1** Explain basic Building Blocks in UML.
- CO 2** Create class and object diagrams in UML.
- CO 3** Develop interaction, use case, activity diagrams.
- CO 4** Design component and deployment diagrams.
- CO 5** Apply Object Oriented Design pattern concepts.

### UNIT-I

(12 Lectures)

#### WHY WE MODEL:

The Importance of Modeling, Principles of Modeling, Object Oriented Modeling.

#### INTRODUCING THE UML:

An overview of the UML, A Conceptual Model of the UML, Architecture, Software Development Life Cycle

### UNIT-II

(10 Lectures)

#### BASIC STRUCTURAL MODELING:

Classes, Relationships, Common Mechanisms and diagrams, class diagrams.

#### ADVANCED STRUCTURAL MODELING:

Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages, Object Diagrams

**UNIT-III****(09 Lectures)****BASIC BEHAVIORAL MODELING:**

Interactions, Interaction diagrams, Use cases, Use case diagrams, Activity Diagrams

**ADVANCED BEHAVIORAL MODELING:**

Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

**UNIT-IV****(10 Lectures)****ARCHITECTURAL MODELING I:**

Component, Deployment, Component diagrams and Deployment diagrams.

**INTRODUCTION:**

What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern

**UNIT-V****(09 Lectures)****CASE STUDY:**

Bank ATM Application, Railway Reservation System.

**TEXT BOOKS:**

1. Grady Booch, James Rumbaugh, IvarJacobson :”The Unified Modeling Language User Guide”, 2<sup>nd</sup> Edition, Pearson Education, 2007.
2. Erich Gamma, “Design Patterns By Elements of Reusable Object-Oriented Software”, Pearson Education.

**REFERENCES:**

1. Meilir Page-Jones: “Fundamentals of Object Oriented Design in UML”, 1<sup>st</sup> Edition, Pearson Education, 2006.
2. Pascal Roques: “Modeling Software Systems Using UML2”, 1<sup>st</sup> Edition, WILEY Dreamtech, 2007.
3. AtulKahate: “Object Oriented Analysis & Design”, 1<sup>st</sup> Edition, TMH, 2007.

4. Mark Priestley: “Practical Object-Oriented Design withUML”, 2<sup>nd</sup> Edition, TMH, 2005.
  5. Craig Larman: “Appling UML and Patterns: An introductionto Object – Oriented Analysis and Design and Unified Process”, 3<sup>rd</sup> Edition, Pearson Education, 2007.
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