3/4 B.Tech - SECOND SEMESTER

IT6T3   **OBJECT ORIENTED ANALYSIS AND DESIGN**   **Credits: 3**

Lecture: 3 Periods/week   **Internal assessment: 30 marks**

Practice/Interaction: 1Period/week   **Semester end examination: 70 marks**

Objectives:
- To provide knowledge of the underlying foundations on object-oriented design and analysis.
- To apply various models for a software application using UML.
- To depict various views used in analysis and design phases of a software project.
- To discuss case studies and creation of respective models.

Outcomes:

Students will be able to
- Understand the importance and basic concepts of modeling.
- Analyze problems and develop structural diagrams.
- Construct various UML diagrams to model the behavior of the system.
- Construct various UML diagrams to model reactive systems.
- Become familiar with architectural modeling and practice various models for a given application.

Syllabus:

UNIT - I

Introduction to UML

Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

Basic Structural Modeling Classes, Relationships, Common Mechanisms and diagrams.

UNIT - II

Advanced Structural Modeling

Advanced classes, Advanced Relationships, Interfaces, Types and Roles, Packages.

Class & Object Diagrams Terms and concepts, Common modeling techniques for Class & Object Diagrams.

UNIT -III

Basic Behavioral Modeling

Interactions: Terms and Concepts, Common Modeling Techniques, Interaction diagrams: Terms and concepts, Common modeling techniques.

Basic Behavioral Modeling-II Use cases, Use case Diagrams, Activity Diagrams: Terms and Concepts, Common Modeling Techniques

UNIT - IV

Advanced Behavioral Modeling

Events and signals, state machines, processes and Threads, time and space, State Chart diagrams: Terms and Concepts, Common Modeling Techniques.

UNIT – V

Architectural Modeling

Component, Deployment, Component diagrams and Deployment diagrams: Terms and Concepts, Common Modeling Techniques.

Case Study: Implementing a Web Based Auction System using UML and Component-Based Programming

Text Books:

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.Rob Pandey, Pauline Wilcox:
2. Applying UML Advanced Application, Elsevier.

Reference Books:

1. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY Dreamtech India Pvt. Ltd.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Craig Larman Appling UML and Patterns: An introduction to Object - Oriented Analysis and Design and Unified Process, Pearson Education .

e-Learning Resources:

1. http://nptel.ac.in/courses/122105022/27A
2. http://www.csm.ornl.gov/~sheldon/public/sheldonf_auction.pdf