



# **Department of Computer Science & Design**

## COURSE MODULE FOR THE SESSION 2023-24(ODD SEMESTER)

# **Course Syllabus with CO's**

Academic Year: 2023 - 2024							
Department: Computer Science & Design							
Course Code	Course Title	Core/Ele ctive	Prerequisite	Contact Hours			Total Hrs/ Sessions
				L	Т	Р	
21CD51	OBJECT ORIENTED MODELLIG AND DESIGN	Core	Unified process approach to design and build a Software system	3	-	-	40

### **Objectives:**

- Describe the concepts involved in Object-Oriented modelling and their benefits.
- Demonstrate concept of use-case model, sequence model and state chart model for a given problem.
- Explain the facets of the unified process approach to design and build a Software system. •
- Translate the requirements into implementation for Object Oriented design.
- Choose an appropriate design pattern to facilitate development procedure

## **Topics Covered as per Syllabus**

### Module -1

Advanced object and class concepts; Association ends; N-ary associations; Aggregation; Abstract classes; Multiple inheritance; Metadata; Reification; Constraints; Derived Data; Packages. State Modeling: Events, States, Transitions and Conditions, State Diagrams, State diagram behaviour.

# Module -2

Use Case Modelling and Detailed Requirements: Overview; Detailed object-oriented Requirements definitions; System Processes-A use case/Scenario view; Identifying Input and outputs-The System sequence diagram; Identifying Object Behavior-The state chart Diagram; Integrated Object-oriented Models.

### Module -3

Process Overview, System Conception and Domain Analysis: Process Overview: Development stages; Development life Cycle; System Conception: Devising a system concept; elaborating a concept; preparing 27.09.2022 a problem statement. Domain Analysis: Overview of analysis; Domain Class model: Domain state model; Domain interaction model; Iterating the analysis.

### Module -4

Use case Realization : The Design Discipline within up iterations: Object Oriented Design-The Bridge between Requirements and Implementation; Design Classes and Design within Class Diagrams; Interaction Diagrams-Realizing Use Case and defining methods; Designing with Communication Diagrams; Updating the Design Class Diagram; Package Diagrams-Structuring the Major Components; Implementation Issues for Three-Layer Design.

# Module -5

Design Patterns: Introduction; what is a design pattern?, Describing design patterns, the catalogue of design patterns, Organizing the catalogue, How design patterns solve design problems, how to select a design patterns, how to use a design pattern; Creational patterns: prototype and singleton (only); structural patterns adaptor and proxy (only).

### **Textbooks:**

1. Michael Blaha, James Rumbaugh: Object Oriented Modelling and Design with UML,2nd Edition, Pearson Education,2005

2. Satzinger, Jackson and Burd: Object-Oriented Analysis & Design with the Unified Process, Cengage Learning, 2005.

3. Erich Gamma, Richard Helm, Ralph Johnson and john Vlissides: Design Patterns – Elements of Reusable Object-Oriented Software, Pearson Education, 2007.

## **Reference Books**

1. Grady Booch et. al.: Object-Oriented Analysis and Design with Applications, 3rd Edition, Pearson Education, 2007.

2.Frank Buschmann, RegineMeunier, Hans Rohnert, Peter Sommerlad, Michel Stal: Pattern – Oriented Software Architecture. A system of patterns , Volume 1, John Wiley and Sons.2007.

3. Booch, Jacobson, Rambaugh : Object-Oriented Analysis and Design with Applications, 3rd edition, pearson, Reprint 2013

Internal Assessment Marks: 40 (3 Session Tests are conducted during the semester and Marks allotted based on average of all performances).