C. U. SHAH UNIVERSITY – WADHWAN CITY

FACULTY OF TECHNOLOGY AND ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING
M. TECH. SEMESTER: - I

SUBJECT NAME: Object Oriented Methodology and Implementation (OOM)
SUBJECT CODE: 5TE01OOM1

Teaching & Evaluation Scheme: -

Subject Code	Subject Name	Teaching Scheme (Hours)				Credit	Evaluation Scheme							Total
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total		Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
5TE01OOM1	Object Oriented Metho-dology and Imple-mentation	4	0	2	6	5	30	1.5	70	3.0	-	20	30	150

Objectives:
Implementation of basics OOP design patterns and methodology with UML modeling language

Prerequisites:
Basic Knowledge modeling and object oriented Concept and Object Oriented Programming.

Course outline:
Object Oriented Methodology (OOM) is a system development approach encouraging and facilitating re-use of software components. With this methodology, a computer system can be developed on a component basis which enables the effective re-use of existing components and facilitates the sharing of its components by other systems.

Sr. No.	Course Contents
1	**What is Object –Oriented?** Characteristics of Object, what is Object-Oriented Development? Key concepts of Object Oriented Design Object Oriented Themes, Overview of Object-Oriented Systems Development: Systems Development Life Cycle: Unified Approach, Object-Oriented Methodology, Unified Modeling Language
2	**Object Orientation Concepts:** Object, Class and instance, inheritance, polymorphism, Object-Oriented Analysis Requirements, Model (Use case), Object Analysis, Object Relationship Analysis, Modeling diagrams: Use case, class, object

3	**Object-Oriented Implementation:** Implementing Classes, Programming with Multiple Classes ,Interfaces, Abstract Classes, Comparing Objects for Equality, A Notation for Describing Object-Oriented Systems, Organizing the Classes, Collection Classes, Exceptions, Run-Time Type Identification, Graphical User Interfaces: Programming Support, Long-Term Storage of Objects	
4	**Modeling Diagrams**: Dynamic Models, Object Interaction, Diagrams and State Diagrams, Use case, class, object, sequence, state-chart, component,deployment	
5	**Elements of Design Patterns:** Various Design patterns, Iterator, Singleton, adapter	
6	**Design and Implementation:** Design, Implementing design	
7	**Analyzing a System:** Overview of the Analysis Phase, Functional Requirements Specification, Use case analysis, Defining Conceptual Classes and Relationships,Using the Knowledge of the Domain	
8	**Exploring Inheritance Applications of Inheritance, Inheritance:** Some Limitations and Caveats, Type Inheritance,Improving the Design,Consequences of Introducing Inheritance,Multiple Inheritance	
9	**Interactive Systems and the MVC Architecture**: The MVC Architectural Pattern, Analyzing a Simple Drawing Program,Designing the System,Design of the Subsystems,Getting into the Implementation,Implementing the Undo Operation,Drawing Incomplete Items,Adding a New Feature,Pattern-Based Solutions	
10	**Designing with Distributed Objects:** Client/Server Systems,Java Remote Method Invocation,Implementing an Object-Oriented System on the Web	

Learning Outcomes:
1. Object-oriented analysis and design (OOAD) has over the years, become a vast field, encompassing such diverse topics as design process and principles, documentation tools, refactoring, and design and architectural patterns. For the students learning experience is incomplete without implementation. This course provides a comprehensive introduction to OOAD.
2. The salient points of its coverage are:
   - A sound footing on object-oriented concepts such as classes, objects, interfaces, inheritance, polymorphism, dynamic linking, etc.
   - A good introduction to the stage of requirements analysis.
   - Use of UML to document user requirements and design.

Books Recommended:
1. Object Oriented Modeling and Design, **Rumbaugh, Blaha , Premerlani, Eddy**, Lorensen; Prentice Hall (1991).
2. Object Oriented Analysis Design and Implementation, **Brahma Dathan, Sarnath Ramnath**; Springer (2011).
3. Object Oriented Analysis & Design, **Grady Booch, and Benjamin Cummings**; Addison-Wesley Longman Verlag (2007).