GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: I

M.E. Information Technology

Subject Name: **Object Oriented Methodology**

Sr.No	Course content
1.	Introduction **-** What is Object –Oriented? Characteristics of Object, what is Object-Oriented Development? Key concepts of Object Oriented Design Object Oriented Themes, Evidence for Usefulness of Object Oriented Development, Modular Design and Encapsulation, cohesion and coupling, Modifiability and Testability.
2.	Basics of Object Oriented Programming – Implementing classes, Programming with multiple classes, Interfaces, Abstract classes, Comparing objects for equality, Notation for describing Object Oriented Systems.
3.	Modeling as a Design Technique **-** Modeling, The Object Modeling Technique.
4.	Object Modeling **–** Object and Classes, links and Associations, Relationships between classes, Advanced Link and Association Concepts, Generalization and Inheritance, Grouping Constructs, A Sample Object Model.
5.	Advanced Object Modeling - Aggregation, Abstract Classes, Generalization as Extension and Restriction, Multiple Inheritance, Meta data , Candidate Keys, Constraints
6.	Dynamic Modeling **-** Events and States , Operations, Nested state Diagrams ,Concurrency, Advanced Dynamic Modeling Concepts , A Sample Dynamic Model , Relation of Object and Dynamic Models.
7.	Functional Modeling **-** function Models , Data Flow Diagrams, specifying operations, Constraints , A sample Functional Model , Relation of functional to Object and Dynamic Models
8.	Language Features for Object Oriented Implementation – Organizing the classes, Collection classes, Exceptions , Run Time Type Identification, Graphical User Interfaces programming support, Long term storage of objects
9.	Elementary Design Patterns - Iterator, Singleton,adapter
10.	Analyzing a System **–** Analysis phase, Gathering the requirements, Functional requirements specification, Defining Conceptual classes and relationships, Using the knowledge of the domain
11.	Design and Implementation – Design, Implementing design
12.	How "Object –oriented " is Our Design? **-** Introduction , A first Example of Refactoring , A second look at Remove Books , Using Generics to Refactor Duplicated Code

13.	Exploring Inheritance **-** introduction, Applications of Inheritance , Inheritance:Some Limitations and Caveats , Type Inheritance ,Making Enhancements to the Library class , Improving the Design , consequences of introducing Inheritance ,Multiple Inheritance
14.	Modeling with Finite State Machines **-** Introduction simple Example , Finite State Modeling , A First Solution to the Microwave Problem , Using the State Pattern, Improving Communication between Objects , Redesign using the Observer pattern ,Eliminating the conditionals ,Designing GUI Programs using the State Pattern
15.	Interactive systems and the MVC architecture **-** Introduction , The MVC Architecture Pattern , Creating a Simple Drawing Program , The Design of the Subsystems , Getting into the Implementation, Implementing the Undo operation, Drawing Incomplete items , Adding a new feature , pattern based solutions
16.	Designing with Distributed Objects **-** Client/ Server Systems, Java Remote Method Invocation , Implementing a An Object –oriented system on the web

- Sr No 1,2,3,4 is prerequisite for the subject, it is self study.

Reference Books:

1. Object oriented Modeling and Design By Rumbaugh, Blaha , Premerlani, Eddy, Lorensen
2. Object Oriented Analysis Design and Implementation By Brahma Dathan, Sarnath Ramnath (University Press).