

<b>Devi Ahilya University, Indore, India</b> <b>Institute of Engineering &amp; Technology</b>				<b>I Year M.E. (Computer Engineering Sp. in Software Engineering )</b> <b>(Part Time)</b>			
<b>Subject Code &amp; Name</b>	<b>Instructions Hours per Week</b>			<b>Credits</b>			
<b>SEP1C2</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Total</b>
<b>Object Oriented Analysis and Design</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>
<b>Duration of Theory Paper: 3 Hours</b>							

### Learning Objectives:

This course offers the opportunity to students to become skilled at the object oriented analysis and design. This is essential as it is the core of the software development process. This course shall help the student to comprehend the principles of object orientation and apply them as the solution for the real life problems in the form of object oriented design. At the end of the course the students shall be able to design a solution which works and solves software development problems.

### Pre requisites:

1. Programming knowledge in any of the object oriented languages like C++, Java.
2. Familiarity and ease with data structures.

### Unit I: Introduction to Modelling and UML 2.X

Importance of Modelling, Principles of Modelling, Object Oriented Modelling, Conceptual model of the UML, Architecture, Software Development Life Cycle

### Unit 2: Basic and Advanced Structural Modelling

Basic Structural Modelling: Classes, Relationships, Common Mechanisms and Diagrams.

Advanced Structural Modelling: Advanced Classes, Advanced Relationships, Interfaces, Types and Roles, Packages

### Unit 3: Class & Object Diagrams

Class & Object Diagrams: Terms, Concepts, Modelling Techniques for Class and Object Diagrams

### Unit 4: Basic Behavioural Modelling

Interactions, Interaction diagrams, Use cases, Use case Diagrams, Activity Diagrams, Events and Signals, State Machines, Processes and Threads, Time and Space Diagram, State Chart Diagrams

### **Unit 5: Architectural Modelling**

Architectural Modelling: Component, Deployment, Component Diagrams and Deployment Diagrams, Case Study, Issues in OO Testing

#### **TEXT BOOKS:**

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

#### **REFERENCE BOOKS:**

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modelling Software Systems Using UML2, WILEY- Dreamtech India Pvt. Ltd.
3. Atul Kahate Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Object-Oriented Analysis and Design with the Unified Process By John W. Satzinger, Robert B Jackson and Stephen D Burd, Cengage Learning.

#### **Learning Outcomes:**

The aim of the course is to help the student be able to understand the real world problems. The student shall be able to solve the complexity of the problem and also depict the problem with the help of standard UML diagrams. In the process of software design the student shall be able to appreciate the application of diagrams, iterative approach which helps in improving the software quality.