COURSE TITLE	**OBJECT ORIENTED ANALYSIS AND DESIGN**
COURSE CODE	**05DS0305**
COURSE CREDITS	**4**

Course Outcomes: After completion of this course, student will be able to:

1 Ability to Understand key object-oriented concepts.
2 Ability to apply UML diagrams for system modeling.
3 Ability to analyze system requirements effectively.
4 Ability to design object-oriented solutions for real-world problems.
5 Ability to Implement object-oriented designs in a programming language.

Pre-requisite of course: Basic understanding of Object Oriented Programming Language Concepts.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**Introduction, An Outline Development Process, A Conceptual Model of the UML** What Is the UML? , How We Got Here,Notations and Meta-Models, Why Do Analysis and Design?, Overview of the Process, Building blocks of UML, Things, Relationships,, Diagrams, common mechanisms in UML	8
2	**Class Diagrams: The Essentials, Class Diagrams: Advanced Concepts** Perspectives, Associations, Attributes, Operations, Generalization, Constraint Rules, When to Use Class Diagrams, Stereotypes,, Object Diagram, Class Scope Operations and Attributes, Multiple and Dynamic Classification, Aggregation and Composition, Derived Associations and Attributes, Interfaces and Abstract Classes, Reference Objects and Value Objects, , Collections for Multivalued Association Ends,, Frozen, Classification and Generalization, Qualified Associations, Association Class, Parameterized Class, Visibility	10

Contents : Unit	Topics	Contact Hours
3	**Use Cases, Interaction Diagrams, State Diagrams. Activity Diagrams** Use Case Diagrams,, Business and System Use Cases, When to Use Use Cases, Sequence Diagrams, , Collaboration Diagrams, Comparing Sequence and Collaboration Diagrams, When to Use Interaction Diagrams, Concurrent State Diagrams, When to Use State Diagrams, Decomposing an Activity, Dynamic Concurrency, Swimlanes, When to Use Activity Diagrams	10
4	**Physical Diagrams, Packages and Collaborations** Deployment Diagrams, Component Diagrams, , Combining Component and Deployment Diagrams, Packages, , Collaborations, When to Use Package Diagrams and Collaborations	8
5	**Case studies** 1. Railway reservation system, ATM, Vending machine, Library management system, Home security system, Wallet App, Online Food ordering App, Job Portal	12
Total Hours		**48**

Textbook :

1 UML Distilled, Martin Fowler, Addison Wesley, 2ndE

2 UML: User's guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Addison Wesley, 2ndE

References:

1 Object-Oriented Modeling and Design with UML, Object-Oriented Modeling and Design with UML, Michael Blaha, James Rumbaugh, Pearson Education , 2ndE

2 Object-Oriented Analysis and Design for Information Systems, Object-Oriented Analysis and Design for Information Systems, Raul Sidnei Wazlawick, Elsevier, 1stE

3 Object-Oriented Analysis and Design with Applications, Object-Oriented Analysis and Design with Applications, Grady Booch et. al., Addison Wesley, 3rdE

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking**
20.00	30.00	25.00	15.00	10.00	

Instructional Method:

1 VIDEO

Instructional Method:

2 PPT

3 DEMO

Supplementary Resources:

1 https://www.tutorialspoint.com/uml/index.htm

2 https://sparxsystems.com/resources/tutorials/uml/part1.html

3 https://developer.ibm.com/articles/an-introduction-to-uml/

4 https://www.uml.org/resource-hub.htm