PVP 23

PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Data Science)

III B. Tech I Semester

Object Oriented Analysis & Design

Course Code	23DS4501C	**Year**	III	**Semester**	I
Course Category	PEC	**Branch**	CSE (Data Science)	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Software Engineering
Continuous Internal Evaluation	30	**Semester End Evaluation**	70	**Total Marks**	100

Course Outcomes		
Upon Successful completion of course, the student will be able to		
CO1	Describe the principles of object-oriented modeling using UML to understand the structure and behavior of complex systems across various domains.	**L2**
CO2	Apply object-oriented modeling principles to develop basic and advanced structural UML diagrams for representing system architecture.	**L3**
CO3	Apply behavioral and architectural UML modeling techniques to design the dynamic behavior and deployment of software systems	**L3**
CO4	Analyze structural, behavioral, and architectural UML models to design and execution of complex software systems.	**L4**

Contribution of course outcomes towards achievement of program outcomes & Strength of correlations (3: Substantial,2: Moderate,1: Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	PO11	PSO1	PSO2
CO1	**2**												
CO2	**3**												
CO3	**3**												
CO4		**3**									**2**		

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Syllabus		
Unit No	**Contents**	**Mapped CO**
I	**Introduction**: The Structure of Complex systems, The Inherent Complexity of Software, Attributes of Complex System, Organized and Disorganized Complexity, Bringing Order to Chaos, Designing Complex Systems. **Case Study:** System Architecture: Satellite-Based Navigation	CO1
II	**Introduction to UML**: Importance of modeling, principles of modeling, object-oriented modeling, conceptual model of the UML, Architecture, and Software Development Life Cycle. **Basic Structural Modeling:** Classes, Relationships, common Mechanisms, and diagrams**.** **Case Study:** Control System: Traffic Management.	CO1, CO2, CO4
III	**Class & Object Diagrams:** Terms, concepts, modeling techniques for Class & Object Diagrams. **Advanced Structural Modeling:** Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages. **Case Study:** AI: Cryptanalysis.	CO1, CO2, CO4
IV	**Basic Behavioral Modeling-I:** Interactions, Interaction diagrams Use cases, Use case Diagrams, Activity Diagrams. **Case Study:** Web Application: Vacation Tracking System	CO1, CO3, CO4
V	**Advanced Behavioral Modeling:** Events and signals, state machines, processes and Threads, time and space, state chart diagrams. **Architectural Modeling:** Component, Deployment, Component diagrams and Deployment diagrams **Case Study:** Weather Forecasting	CO1, CO3, CO4

Learning Resources

Text Books

1. Object-Oriented Analysis and Design with Applications by Grady Booch, Robert A. Maksimchuk, Michael W. Engle, Bobbi J. Young, Jim Conallen, Kellia Houston, 3rd Edition, 2013, Pearson.
2. The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson, 2nd Edition, 2005, Pearson Education.

References

1. Fundamentals of Object-Oriented Design in UML by Meilir Page-Jones, 1st Edition (Illustrated), 2000, Addison-Wesley Professional
2. Modeling Software Systems Using UML 2 by Pascal Roques, 1st Edition, 2009, Wiley India Pvt. Limited
3. Object Oriented Analysis & Design by Atul Kahate, 1st Edition, 2004 (India), McGraw-Hill Education (India)
4. Applying UML and Patterns: An Introduction to Object-Oriented Analysis & Design by Craig Larman, 3rd Edition (Illustrated Reprint), 2005, Pearson Education

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E-Recourses and other Digital Material
1. https://www.youtube.com/watch?v=OkCiafNXLx0
2. https://www.edx.org/course/uml-class-diagrams-for-software-engineering
3. https://onlinecourses.nptel.ac.in/noc20_cs84/preview