

PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI & ML)

III B. Tech – I Semester CSE (AI&ML)

Object Oriented Analysis and Design

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|---------------------------------------|-----------|---------------------------------|------------|----------------------|----------------------|
| Course Code | 20AM4501D | Year | III | Semester | I |
| Course Category | PEC | Branch | CSE(AI&ML) | Course Type | Theory |
| Credits | 3 | L-T-P | 3-0-0 | Prerequisites | Software Engineering |
| Continuous Internal Evaluation | 30 | Semester End Examination | 70 | Total Marks | 100 |

Course Outcomes

Upon successful completion of the course, the student will be able to

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|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| CO1 | Describe the fundamental concepts of object-oriented modeling and analysis and its application in the software development life cycle. | L2 |
| CO2 | Apply UML diagrams to model the structural and behavioral aspects of software systems. | L3 |
| CO3 | Apply behavioral modeling techniques by developing interaction diagrams, use case diagrams, and activity diagrams to model dynamic aspects of software systems. | L3 |
| CO4 | Analyze the design trade-offs and architectural decisions involved in object-oriented software development to ensure the successful delivery of software projects. | L4 |

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations

(3:High, 2: Moderate, 1:Low)

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| CO1 | 2 | | | | | | | | | | | | | |
| CO2 | 3 | | | | | | | | | | | 2 | | |
| CO3 | 3 | | | | | | | | | | | 2 | | |
| CO4 | | 3 | | | | | | | | | | 2 | | |

| Syllabus | | |
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| Unit No. | Contents | Mapped CO |
| I | 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 and Traffic Management. | CO1 |
| II | 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 and Cryptanalysis. | CO1, CO2 |
| III | Basic Behavioral Modeling: Interactions, Interaction Diagrams, Use Cases, Use Case Diagrams, Activity Diagrams. Case Study: Vacation Tracking System. | CO1, CO2, CO3 |
| IV | Advanced Behavioral Modeling: Events and Signals, State Machines. Essentials: Initial, Final and Simple States, Processes and Threads, Traits of Successful Projects, Time and Space. State Chart Diagrams: State, Transition, Event, Action, Guard Condition. | CO1, CO2, CO4 |
| V | Architectural Modeling: Component: Introduction to Components, Component Models and Standards, Design and Specification. Deployment: Deployment Environments, Strategies, Tools and Technologies, Component diagrams and Deployment diagrams. Case Study: Weather Forecasting | CO1, CO2, CO4 |

| Learning Resources | |
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| Text Books | |
| 1. Object- Oriented Analysis and Design with Applications, Grady BOOCH, Robert A. Maksimchuk, Michael W. ENGLE, Bobbi J. Young, Jim Conallen, Kellia Houston, Third Edition, 2013, Pearson. | |
| Reference Books | |
| 1. UML2 and the Unified Process: Practical Object-Oriented Analysis and Design, Jim Arlow, Ila Neustadt. Second Edition, 2015, Pearson. | |
| 2. Applying UML and Patterns, Craig Larman, Third Edition, 2017, Pearson. | |
| 3. UML Distilled: A Brief Guide to the Standard Object Modeling Language, Martin Fowler, Third Edition, 2018, Addison-Wesley Professional. | |

e- Resources & other digital material

1. Object Oriented Analysis and Design : <https://nptel.ac.in/courses/106105153>
2. Object Oriented Analysis and Design : https://onlinecourses.nptel.ac.in/noc19_cs48/preview
3. Object Oriented Analysis and Design:
[:https://archive.nptel.ac.in/courses/106/105/106105153/](https://archive.nptel.ac.in/courses/106/105/106105153/)
4. Object Oriented Analysis and Design:
https://www.youtube.com/playlist?list=PLT2n4HATwbe5EnHQ2NFBfNukTAgs_Hnf5
5. Object Oriented Analysis and Design:
https://www.youtube.com/playlist?list=PLAXUYU7PbJhhH0iWvtyD_J2L8mv15pchq
6. Object Oriented and Design by Kenny Wong(Coursera):
<https://www.coursera.org/learn/object-oriented-design>