

5th Semester	RCS5D005	Object-Oriented Analysis & Design	L-T-P 3-0-0	3 Credits
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Objective:

- To learn the concepts of Object-Oriented Analysis and Design;
- Exposing the development of OOAD based applications

Module I:**(8 Hours)**

Object Model – Evolution, Elements – Nature of Classes and Objects – Relationships among Classes - Classification – Identification of classes and objects – Key abstractions and mechanisms – Basic and Advanced Modeling techniques.

Module II:**(8 Hours)**

Methodology – Modeling and UML – Rumbaugh’s Method – Booch Method – Jacobson et al Method – Comparisons – UML – Static-Dynamic Models – Diagrams – Use Cases

Module III:**(8 Hours)**

Process of design, design principles, architectural patterns, design document, difficulties and risks in design - Frameworks: reusable subsystem. Design patterns – Singleton, observer, adapter, Façade, proxy with examples. - Pattern Categories - Relationships between patterns - Pattern descriptions – Patterns based Applications – Object Oriented Database

Module IV:**(8 Hours)**

Java - Features – Structure – Elements of Java – Array, String, String Buffer, Vectors – Methods – Object Oriented Features- Classes, Objects – Constructors – Package – Inheritance – Interface – Abstract Class - Special types of classes.

Module V:**(8 Hours)**

Applet Programming – AWT – Graphics - Event Handling – Exception Handling – Utilities and Collections – I/O Streams - Multithreaded Programming - Swings - J2EE Architecture

Outcome:

- Ability to define the fundamentals of OO approach
- Ability to design OO Application using design patterns.
- Ability to solve real world problems by applying OOAD principle
- Ability to acquire expertise in Java Programming

Books:

- [1] Grady Booch, Michael W. Engel, Kelli A. Houston, Robert A. Maksimchuk, Bobbi J. Young, Jim Conallen, “Object-Oriented Analysis and Design with Applications”, 3rd Edition, Pearson Education, 2009
- [2] Michael Blaha and James Rumbaugh, “Object-Oriented Modeling and Design with UML”, 2nd Edition, Pearson Education, 2005
- [3] Erich Gamma, Richard Helm, Ralph Johnson & John Vlissides, “Design Patterns: Elements of Reusable Object-oriented Software”, Pearson Education India, 2004.

Digital Learning Resources:

Course Name: Object-Oriented Analysis & Design
Course Link: <https://nptel.ac.in/courses/106/105/106105153>
Course Instructor: Prof. ParthaPratim Das & Team, IIT Kharagpur