COURSE HANDOUT

Object Oriented Analysis and Design(COM-702)

CSE- 7th SEMESTER

ACADEMIC YEAR (2024)

Ms. Azra Ashraf

Assistant Professor

Department of Computer Science & Engineering

School of Management

Model Institute of Engineering & Technology (Autonomous)

Kot Bhalwal, Jammu - 181122

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
COM-702	OOAD	Core	3	3	0	0	50	100	150

COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Explain the concepts of OOAD, UML and SDLC in software development.
CO2	Apply use case modeling for different software development scenarios.
CO3	Apply OOP principles, design patterns, and UML for development.
CO4	Design optimized software systems with diverse architectural styles and patterns.
CO5	Analyze design models and apply OOP in coding and testing.

Section-A

UNIT 1: Introduction to Object-Oriented Analysis and Design (OOAD): Overview of object-oriented concepts and principles, Benefits of using object-oriented analysis and design, Introduction to the Unified Modeling Language (UML), Software development life cycle (SDLC) and OOAD. **(10 Hrs.)**

UNIT 2: Requirements Gathering and Analysis: Understanding and documenting user requirements, use-case modeling and analysis, Domain modeling and identifying objects, classes, and relationships, Creating a requirements specification document. **(10 Hrs.)**

UNIT 3: Object-Oriented Design: Class and object modeling using UML, Object-oriented principles: inheritance, polymorphism, encapsulation, and abstraction, Design patterns and their application, Component-based design and modularization. **(12 Hrs.)**

Section-B

UNIT 4: System Architecture and Design: Architectural styles and patterns, designing software systems with multiple components and layers, User interface design and usability considerations, Designing for performance, scalability, and maintainability**.** **(10 Hrs.)**

UNIT 5: Implementation and Testing: Translating design models into code, Object oriented programming languages and frameworks Testing strategies and techniques, Integration testing and system testing. **(10 Hrs.)**

Textbooks

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Object-Oriented Analysis and Design with Application	Ph.D. Young, Bobbi, Grady Booch, Jim Conallen	Addition Wesley	3rd (2017)
2.	Object-Oriented Analysis and Design with UML	Grady Booch, Robert A.Maksimchuk, Michael W. Engel,Bobbi J. Young, Jim Conallen, Kelli A.Houston	Pearson Education	3rd (2007)
3.	Software Engineering A Practitioner's Approach	Roger S. Pressman	McGraw-Hill	7th (2010)

Reference Book

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Object-Oriented Analysis and Design	Brahma, Ramnath Gupta	Springer	2nd (2017)

COURSE PLAN		
Unit-I Introduction to (OOAD)		
S.No	**Topics**	**Recommended Books**
1	Introduction to Object-Oriented Analysis and Design (OOAD)	Book 1, Ch.6
2	Overview of object-oriented concepts and principles	Book 1, Ch.6
3	Benefits of using object-oriented analysis and design	Book 1, Ch.7
4	Introduction to the Unified Modeling Language (UML)	Book 1, Ch.5
5.	Software development life cycle (SDLC) and OOAD.	Book 1, Ch.6
Unit-II Requirements Gathering and Analysis		
6	Understanding and documenting user requirements	Book1,Ch 7
7	Use-case modeling and analysis	Book 1, Ch.5
8	Domain modeling and identifying objects,classes, and	Book 1, Ch.5

	relationships	
9	Creating a requirements specification document	Book 1, Ch.7
Unit-III Object-Oriented Design		
10	Class and object modeling using UML	Book 1, Ch 3 &5
11	Object-oriented principles: inheritance,polymorphism, encapsulation, and abstraction	Book 3,Ch 8
12	Design patterns and their application	Book 3.Ch12
13	Component-based design and modularization	Book 3,Ch 10
Unit-IV System Architecture and Design		
14	Architectural styles and patterns	Book 3,Ch 13
15	Designing software systems with multiple components and layers	Book 3,Ch 12
16	User interface design and usability considerations	Book 3,Ch 12
17	Designing for performance, scalability, and maintainability.	Book 3,Ch 12
Unit-V Implementation and Testing		
18	Translating design models into code	Book 2, Ch.8
19	Object oriented programming languages and frameworks Testing strategies and techniques	Book 1, Ch.8
20	Integration testing and system testing.	Book 2, Ch.8

ADDITIONAL WEB RESOURCES

1.	**MOOC:Object-Oriented Design** https://www.coursera.org/learn/object-oriented-design
2.	**NPTEL:**https://onlinecourses.nptel.ac.in/noc22_cs99/preview

GRADING AND ASSESSMENT

- **Sessional Test**: 20 marks
- **Assignment**: 20 marks
- **Attendance**: 10 marks
- **Final Examination**: 100 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity**: MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions**: Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Tuesday(12:05 PM - 12:55 PM)
  Friday (12:05 PM - 12:55 PM)

- **Contact Information**
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