

Course Code	UCA20D08J	Course Name	OBJECT ORIENTED ANALYSIS AND DESIGN	Course Category	D	Discipline Specific Elective Course	L	T	P	C
							4	0	4	6

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Applications	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to,	Learning	Program Learning Outcomes (PLO)
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CLR-1 : Build high quality reusable software	1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLR-2 : Apply UML for modeling problems																		
CLR-3 : Understand Software Design Patterns																		
CLR-4 : Develop reliable software systems																		
CLR-5 : Apply Standardized testing approaches																		
CLR-6 : Practical Approach for modeling simple real world applications																		

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Fundamental Knowledge	Application of Concepts	Link with Related Disciplines	Procedural Knowledge	Skills in Specialization	Ability to Utilize Knowledge	Skills in Modeling	Analyze, Interpret Data	Investigative Skills	Problem Solving Skills	Communication Skills	Analytical Skills	ICT Skills	Professional Behavior	Life Long Learning
CLO-1 : Master the vocabulary, use and idioms of the UML		2	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-2 : Scope of Object Oriented Software Systems		3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-3 : Understand and Apply UML		3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-4 : Design UML Architecture for a system		3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-5 : Develop Test Templates		3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-
CLO-6 : Ensure Software Quality Assurance		3	85	80	L	H	H	H	H	-	-	M	M	L	-	H	-	-	-

Duration (hour)	24	24	24	24	24
S-1	SLO-1 Introduction to OOAD	Basics of Structural Modeling	Behavioral Modeling	Architectural Modeling	Patterns & frameworks
	SLO-2 OO Basics	Classes	Interactions	Component	Patterns & Architecture
S-2	SLO-1 Importance of Modelling	Class Diagram	Sequencing	Components and Interfaces	Frameworks
	SLO-2 Principles of Modelling	Common Modeling Techniques for classes	Interactions-Links And Associations	Simple and Extended Components	Mechanisms
S-3	SLO-1 Overview of UML	Relationships in classes	Objects Creation	Components And Classes	Modeling Design Patterns

	SLO-2	Where can UML be used?	Modeling Dependencies	Modeling Flow Control by Time	Components And Interfaces	Modeling Architecture Patterns
S-4	SLO-1	Overview of Conceptual Model of UML	Modeling Inheritance	Modeling Flow Control by Organization	Kinds Of Components	Black Board Architectural Patterns
	SLO-2	Building Blocks of UML-Things	Modeling Structural Relationship	Use case Diagrams	Organizing Components	Software Quality
S 5-8	SLO-1	Lab 1: Case Study: ATM System	Lab 4: Case Study: Student Information System	Lab 7: Case Study: Stock Maintenance System	Lab 10: Case Study: Exam Registration System	Lab 13: Case Study: Mark Analysis
	SLO-2					
S-9	SLO-1	UML Relationships	Extensibility Mechanisms in UML	Usecase	Component Diagrams	Software Testing
	SLO-2	UML Diagrams	Stereotypes	Actors	Modeling API using Components	Need for testing
S-10	SLO-1	Rules of UML	Tagged values	Use Case Scenario	Modeling Tables	Kinds of Error
	SLO-2	Common Mechanisms in UML	Constraints	Use Case and Collaborations	Modeling Files	Testing Standards
S-11	SLO-1	Architecture	Notes	Organizing Usecases	Modeling Documents	Develop Test Cases
	SLO-2	Object Oriented Methodologies	Standard Elements	Modeling Context using usecases	Modeling Source Code using Component Diagram	Develop test plans
S-12	SLO-1	SDLC	Other Adornments in UML	Modeling Requirements using usecases	Deployment	Issues in OO Testing
	SLO-2	SDLC Phases	Modeling New Building Blocks	Use case Diagram with relationships	Simple and Extended Nodes	Unit Testing
S 13-16	SLO-1	Lab:2 Case Study: Library Management System.	Lab 5: Case Study: Cellular Phone	Lab 8: Case Study: Passport Registration System	Lab 11: Case Study: Order Processing System	Lab 14: Case Study: Develop test template
	SLO-2					
S-17	SLO-1	Object Oriented Methodologies	Modeling Comments	Activity Diagram	Nodes and components	Integration Testing
	SLO-2	Object Oriented Analysis	Modeling new properties	Modeling operation using Activity Diagram	Organizing Nodes	Black Box Testing
S-18	SLO-1	Differentiate OOA & OOD	Modelling Group of Elements using Packages	State machine	Connections in Nodes	White Box Testing
	SLO-2	Features of OOP	Interfaces	Modeling the lifetime of an object	Deployment Diagrams	Impact of Object Orientation on Testing
S-19	SLO-1	OOPL	Object Diagrams	Statechart diagram	Modeling Processors	GUI Testing
	SLO-2	Grady Booch Methodology	Objects & Links	State chart Diagram Symbols	Modeling Devices	System Testing
S-20	SLO-1	Rambaugh Methodology	Modelling Anonymous Objects	Modeling State Machine	Modeling the Distribution of Components	Object Oriented metrics
	SLO-2	Jacobson Methodology	Modeling object structures	Modeling Reactive objects using state chart	Modeling Embedded System using Deployment Diagram	Testing Standards

S 21- 24	SLO-1 SLO-2	Lab3: Case Study-Quiz System	Lab 6: Illustrate object diagram for Payroll Application	Lab:9: Case Study: Placement Registration System	Lab 12: Case Study: Air Line Reservation	Lab 15: Develop Test cases and Test plan for any system
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Learning Resources	<ol style="list-style-type: none"> 1. Grady Booch, James Rumbaugh and Ivar Jacobson (2004). "The Unified Modeling Language User Guide". Addison Wesley Longman Pvt. Ltd., Singapore, 2. Craig Larman, (2005), "Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development", Third Edition, Pearson Education 3. Ali Bahrami, (1999), " Object Oriented Systems Development", McGraw Hill International Edition
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Learning Assessment											
Level	Bloom's Level of Thinking	Continuous Learning Assessment (50% weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4 (10%)#			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
	Understand										
Level 2	Apply	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Analyze										
Level 3	Evaluate	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Create										
	Total	100 %		100 %		100 %		100 %		100 %	

CLA – 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

Course Designers		
Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
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