Course Code	PIT21C203J	Course Name	OBJECT ORIENTED ANALYSIS AND DESIGN	Course Category	C	Professional Core	L	T	P	C
							3	0	4	5

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

Course Learning Rationale (CLR):	The purpose of learning this course is to:
CLR-1 :	Understanding Object Basics, Classes and Objects, Inheritance
CLR-2 :	How software objects are altered to build software systems that are more robust
CLR-3 :	Gaining enough competence in object-oriented analysis and design (OOAD) to tackle a Complete object oriented project.
CLR-4 :	Understanding the issues and options in reuse
CLR-5 :	Using UML, a common language for talking about requirements, designs, and component Interfaces

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
		1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLO-1 :	Student will be able to demonstrate the importance of modelling in the software development life cycle.	3	80	70	H	H	M	-	-	-	-	-	H	H	-	-	M	H	H
CLO-2 :	Become familiar with the Unified modelling Language	3	85	75	H	H	H	H	H	-	M	-	H	H	-	-	M	H	H
CLO-3 :	Understand the object-oriented approach to analyzing and designing systems and software solutions	3	75	70	H	H	M	H	H	-	M	-	H	H	-	-	M	H	H
CLO-4 :	Employ the Unified modelling Language notations to create effective and efficient system designs.	3	85	80	H	H	H	-	-	-	-	-	H	M	-	-	M	H	H
CLO-5 :	Understand the difference between writing programs for the software and doing analysis and design.	3	85	75	H	M	M	M	M	M	M	-	H	H	-	M	M	H	H
CLO-6 :	Problem formulation and decomposition (analysis) and solution building (design) will be covered.	3	80	70	H	H	M	-	-	-	-	-	H	H	-	-	M	H	H

Duration (Hour)		21	21	21	21	21
S-1	SLO-1	Object Oriented development	Simple Class Model	State Diagrams	Process Overview: Development Stages	Allocation of Subsystems
	SLO-2	Object Oriented Themes	Navigation of Class Models	State Diagram Behavior	Development Life Cycle	Management of Data Storage
S-2	SLO-1	Evidence for Usefulness of Object Oriented development	Advanced Class Modeling: Advanced Object Concepts	Advanced State Modeling: Nested State Diagrams	System Conception: Devising a System Concept	Handling Global Resources
	SLO-2	OO Modeling History	Class Concepts	Nested States	Elaborating a Concept	Choosing a Software Control Strategy
S3	SLO-1	Modeling Concepts: Modeling	Association Ends	Signal Generalization	Preparing a problem Statement	Handling Boundary Conditions
	SLO-2	Abstraction	N-ary Associations	Concurrency	Domain Analysis: Overview of Analysis	Setting Trade-off Priorities
S4 - 7	SLO-1 / SLO-2	Laboratory 1: Develop an SRS document.	Laboratory 4 : Create a Domain model for business activities	Laboratory 7: Create a State diagram for an induction motor control	Laboratory 10 : Develop Stock maintenance system using collaboration diagram	Laboratory13 : Develop a Sequence diagram for Foreign Trading system
S8	SLO -1	The Three Models-Class Model	Aggregation	Sample State Model	Domain State Model	Common Architectural Styles
	SLO-2	State Model	Abstract Classes	Relation of Class & State Models	Domain Interaction Model	Architecture of the ATM System
S9	SLO-1	Interaction Model	Multiple Inheritance	Interaction Modeling: Use Case Models	Iterating the Analysis	Class Design: Overview of Class Design
	SLO-2	Relationships among Models	Kinds of Multiple Inheritance	Guidelines for Use Case Models	Application Analysis: Application Interaction Model	Bridging the Gap
S10	SLO-1	Overview of Unified Modeling Language	Metadata	Sequence Models	Application Class Model	Realizing Use Cases
	SLO-2	Introduction to UML diagrams	Reification	Guidelines for Sequence Models	Application State Model	Designing Algorithms –
S11 – 14	SLO-1	Laboratory 2: Inheritance Generalization	Laboratory 5 : State Model Develop a Class Model of a workstation	Laboratory 8: Design a state chart diagram for passport automation application	Laboratory 11 : Use Case Relationships Develop Conference management system using state chart diagram	Laboratory 14 : Develop ATM Banking System by using UML Diagram

	SLO-2	Create Class for Student Information system	Window Management System.			
S15	SLO-1	Class Modeling: Object	Constraints	Activity Models	Adding Operations	Recusing Downward
	SLO-2	Class Concepts	Derived Data	Guidelines for Activity Models	System Design: Overview of System Design	Refactoring
S16	SLO-1	Link	Packages	Advanced Interaction Modeling	Estimating performance	Design Optimization
	SLO-2	Association Concepts	State Modeling: Events	Use Case Relationships	Making a Reuse plan	Reification of Behavior
S17	SLO-1	Generalization	States	Procedural Sequence Models	Breaking a System into Subsystems	Adjustment of Inheritance
	SLO-2	Inheritance	Transitions & Conditions	Special Constructs for Activity Models	Identifying Concurrency	Organizing Class Design
S18-21	SLO-1 SLO-2	Laboratory 3: Create inheritance for Student Information system	Laboratory 6: Develop the Use Case model for the Library Management System	Laboratory 9 : Prepare an activity diagram for computing a restaurant bill	Laboratory 12 : Develop a sequence diagram for Online examination system	Laboratory 15 : Develop E-Book Management System using UML Diagram

Learning Assessment											
Bloom's Level of Thinking		Continous 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, Scientific Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications etc.,

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