SANKALCHAND PATEL UNIVERSITY ।। अथातो ज्ञानजिज्ञासा ।।	**FACULTY OF COMPUTER SCIENCE** **Master Of Computer Application (Sem-III)** In Effect from Academic Year 2023-24

Branch Name:	MCA
Program Code:	CS201
Course Name:	**Software Engineering With UML**
Course Code:	3CS2010301T
Pre-requisite Course:	Systems & Object-Oriented Design Methodologies and Fundamentals of Structured Programming.

Course Objective:

1. Get better Understand, Analyze and Model User's Requirements, Select Appropriate Process Model Apply it to All Stages of Software Development Life Cycle (SDLC)
2. Select and Apply Appropriate Metrics to Estimate Software Size, Effort, and Cost
3. Understand the Characteristics and Applicability of Various Software Tools
4. Able to teach the students tried-and-tested techniques widely embraced by experienced analysts plus new and emerging tools and techniques.
5. Get a good balanced exposure to both traditional and object-oriented approaches to system analysis & design.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
4	-	-	4	60	40	-	-	100

Subject Contents			
Sr. No	**Topic**	**Total Hours**	**Weightage (%)**
1	**Introduction to Software Engineering & Process Models** Software, Software Engineering, Software Characteristics, Software Application, Software Process, Layered Technology. **Process Models** – Waterfall, Incremental, Evolutionary Process Model– Prototype and Spiral Model. **Agile Process;** Extreme Programming (XP), Brief Overview of Other Agile Process Models: Adaptive Software Development, Scrum	12	25
2	**Principles of Software Engineering; and Requirements Modeling** Introduction, Core Principles of Process and Practice, Principles Guiding Each Framework Activity. Requirements Engineering, Groundwork for Understanding of Software Requirements, Overview of Eliciting Requirements, Building the requirements Model, Negotiating Requirements, Validating Requirements. Requirement Modeling Strategies, Overview of Flow-Oriented Modeling, Behavioral Modeling, Requirements Modeling for WebApp.	12	25
3	**Introduction to Object Oriented Analysis and Design** Overview of UML, Conceptual Model of UML, Architecture, Software development life cycle **Basic Structural Modeling** Classes, Relationships, Class Diagrams	12	25
4	**Behavioral Modeling** Interactions, Use Cases, Use Case Diagrams, Interaction Diagrams, Activity Diagrams Events and Signals, State Machines, State chart Diagram	12	25

Text Books:

1. Roger S. Pressman, "Software Engineering – A Practitioner's Approach", 7th Edition, McGraw Hill Publications
2. Sommerville, "Software Engineering", 8th Edition, Pearson Education

References Books:

1. Waman S. Jawadekar, "Software Engineering – Principles and Practices", TMGH Publication
2. Systems Analysis and Design by Kendall & Kendall, PHI Publication, 7th Edition
3. The Unified Modeling Language - User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education Publication, 2009 Reprint
4. Object-Oriented Modeling and Design with UML by Michael Blaha, James Rumbaugh, Pearson Education Publication, 2nd Edition, 2007 Reprint
5. Object Oriented Analysis and Design Using UML by Mahesh P. Matha, PHI Publication

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Design a **solution** to a given problem using one or more design patterns and implement the design in a programming language.	3 Applying,
CLO2	**Understand** common lifecycle processes including waterfall (linear), incremental approaches (such as Unified process), and agile approaches.	2 Understanding, 1 Remembering
CLO3	**Learn** Key **modeling** concepts that apply to both the traditional structured approach and the newer object- oriented approach	4 Analyzing
CLO4	**Identify** and analyze the system requirements using various system analysis techniques	2 Understanding,
CLO5	**Design** information system using structured and object-oriented techniques	6 Creating
CLO6	**Model** different views of information systems using object-oriented design patterns	4 Analyzing
CLO7	**Recognize** current and future trends of system **analysis and design**	6 Creating 2 Understanding,

Mapping of CLOs with Pos & PSOs

Course Learning Outcomes	Program Out comes (POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	H	H	M	L		L			M			M	M	L
CLO2		L			M		L	M			M		M	M
CLO3	M		M		H	M			M			M	M	M
CLO4	L	M		L		M	L		M	L		M	L	H
CLO5		M	M		L		M		H		L		L	H
CLO6	M		M		M	L	M	M		M	L		M	M
CLO7	M	L		L	M	M	H		M		M	L	H	M

H: High, M: Medium, L: Low