16MA305	SOFTWARE ENGINEERING METHODOLOGY	L/T/P/C 3/0/0/3

PREREQUISITES:

COURSE OBJECTIVES

1. An understanding of different software processes and how to choose between them
2. How to elicit requirements from a client and specify them
3. Design in the large, including principled choice of software architecture, the use of modules and interfaces to enable separate development, and design patterns.
4. Understanding good coding practices, including documentation, contracts, regression tests and daily builds.
5. Various quality assurance techniques, including unit testing, functional testing, and automated analysis tools.
6. Working with version control, configuration management, unit/regression testing, issue tracking, and debugging tools

COURSE OUTCOMES

Upon Successful completion of the course the student shall

1. Creating a project plan
2. Creating and analyzing design models

Course Contents

UNIT NO.	DESCRIPTION	TEXT BOOK	PAGES	LECTURE HOURS
I	**SOFTWARE PROCESS**			
	Introduction	T1	1-25	1
	A Generic Process Model	T1	31-36	1
	Prescriptive Process Model, Specialized Process Model	T1	38-53	2
	Agile Development: Agility, cost , process	T1	67-71	1
	Extreme Programming	T1	72-91	1
	other models, A Tool set for the Agile Process	T1	61-66	2
	Agile Project Management, Scaling Agile Methods	T2	72-81	1
II	**REQUIREMENTS MODELING**			
	Scenario Based Methods : Requirements Analysis, ScenarioBased Modeling, UML models that supplement the use case	T1	166-181	2
	Class Based Methods: Identifying Analysis Classes, Specifying Attributes, Defining Operations, Class Responsibility-Collaborator Modeling, Associations and Dependencies, Analysis Packages	T1	184-200	2
	Requirements Modeling :Behavior,Patterns and Web/Mobile Apps: Creating a Behavioral Mode, Identifying Events with the Use Case, State Representations, Patterns for Requirements Modeling	T1	202-212	3

	Requirements Modeling for Web and Mobile Apps	T1	213-221	2
III	**DESIGN CONCEPTS AND PRINCIPLES**			
	Design process and concepts, design model	T1	228-248	1
	Designing class based components	T1	291-299	1
	User interface design: Rules, Analysis and design, interface analysis, design steps, WebApp and Mobile Interface Design	T1	318-341	2
	Pattern Based Design: Design Patterns, Pattern Based Software Design, Architectural Patterns, Component Level Design Patterns, User interface desing patterns, WebApp design Patterns, Patterns for Mobile apps	T1	348-367	2
	Design Pyramid for WebApps , Developing MobileApps	T1	375,395-400	1
	Software configuration Management	T1	624-649	2
IV	**TESTING**			
	Software Testing Strategies : A Strategic Approach to Software testing	T1	466-472	2
	Test strategies for Conventional software, OO software, WebApps, MobileApps	T1	473-483	1
	Validation Testing, System Testing, The Art of Debugging	T1	483-492	2
	Testing Conventional Applications: Testing Fundamentals, White Box testing, Basis path testing	T1	497-506	1
	Control Structure Testing, Black Box testing, Model based Testing	T1	507-516	2
	Testing for Real Time Systems, Patterns for Software Testing	T1	517-520	1
V	**SOFTWARE PROJECT MANAGEMENT**			
	Software Measurements , Metrics for software quality	T1	708-719	1
	Estimation for Software Projects: Software Project Estimation, Decomposition Techniques, Empirical Estimation Models	T1	733-745	2
	Project Scheduling ,	T1	754-772	2
	Risk Management	T1	778-791	2
	Software Reengineering, Reverse Engineering Restructuring Forward Engineering	T1	802-813	1
	CASE STUDY : Taxonomy of CASE tools.			1
				Total instructional hours:45

TEXT BOOKS:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 8th edition, 2015.
2. Ian Sommerville, Software engineering, Addison-Wesley, 9th edition, 2011.
3. Bob Hughes and Mike Cotterell , "Software Project Management", Third Edition, Tata McGraw-Hill,2004.

REFERENCE BOOKS:

1. PankajJalote- An Integrated Approach to Software Engineering, Narosha Publishers, 3rd edition,2005.
2. James F Peters and WitoldPedryez, "Software Engineering – An Engineering Approach",John Wiley and Sons, New Delhi, 2007.