

Branch Name:	Information Technology
Semester/Year:	Semester V/ Third Year
Subject Title:	Software Engineering and Project Management
Subject Code:	2ET1050501T
Pre-requisite:	Object Oriented Programming fundamental, UML. Awareness about software systems, Computer fundamentals would be beneficial.

Course Objective:

- Be successful professionals in the field with solid fundamental knowledge of software engineering.
- Utilize and exhibit strong communication and interpersonal skills, as well as professional and ethical principles when functioning as members and leaders of multi-disciplinary teams.
- Apply their foundations in software engineering to adapt to readily changing environments using the appropriate theory, principles and processes.

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Subject Content

Sr. No	Topic	Total Hours	Weightage (%)
1.	Introduction to Software and Software Engineering: The Evolving Role of Software, Software: A Crisis on the Horizon and Software Myths.	03	10
2.	Process Models (Software Development Life Cycle): What is Software Process?, What is Software Development Life Cycle (SDLC)? Software Engineering: A Layered Technology, Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Agile Process Model, Component-Based Development, The waterfall model (classical life cycle model), Incremental Process model, Evolutionary process model.	08	15
3.	Design and Modeling with UML: Software design concepts, Coupling and cohesion, UML diagrams: Use case diagram, class diagram, data flow diagram, activity diagram, Data dictionary, Software designs: Function oriented design and object oriented design, Software design approaches: top down and bottom up approach Architectural design, Component-Level design, User-Interface Design, Pattern Based Design, Web-App Design.	09	15
4.	Software Testing and Maintenance: Software testing concept, designing of test cases and Testing techniques, Unit testing, black box testing, white box testing, testing web and mobile application, Testing tools (win runner, load runner), testing documentation. Test Planning, Test Design and Implementation, Testing Network Management Systems, Testing Object-Oriented systems, Test Execution and	06	10

	Measurement, Transaction-flow testing, Software Reuse, Software Aging, Product Enhancement, Architectural Simplification, Automation Testing		
5.	Project & Quality Management: Quality Concepts, Review Techniques, Software Reliability Quality Assurance-ISO 9000 Quality Standard, SQA Plan.	04	10
6.	Project Management Case study: Analyze and design the following systems: Online banking system, Online furniture shopping, mobile application, E-health care management system, Online bus reservation system, Human resource management system, Online examination system.	06	20
7.	Advanced Topics in Software Engineering: Component-Based Software Engineering, Client/Server Software Engineering, Web Engineering, Reengineering, Computer-Aided Software Engineering, Software Process Improvement, and Emerging Trends in software Engineering.	04	20

List of Text Books:

1. Roger S. Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Editions
2. Bob Hughes, Mike Cotterell, Rajib Mall: Software Project Management, 6th Edition, McGraw Hill Education, 2018.

List of reference books:

1. Software Engineering by Sommerville
2. Fundamentals of Software Engineering by Rajib Mall
3. Fundamentals of Software Engineering by K. K. Agrawal
4. Object-Oriented Modelling and Design with UML by Rumbaugh, Blaha
5. Ian Sommerville, Software engineering, Pearson education Asia
6. Software Engineering Fundamentals by Ali Behhforoz & Frederick Hudson OXFORD
7. John M Nicolas, Project Management for Business, Engineering and Technology, elsevier

e-Resources (If any):

- 1 <http://nptel.ac.in/>
- 2 <http://www.mhhe.com/engcs/compsci/pressman/student/olc/cases.mhtml>
- 3 <http://www.softwaretestingclass.com/software-testing-tools-list/>
- 4 <http://www.rspa.com/spi/>
- 5 <https://www.edx.org/school/uc-berkeleyx>

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Design the application of different SDLC models for different types of projects.	Understanding (1) Applying (2)
COL2	Develop and understand the application of different requirement models require for any software.	Understanding (1) Applying (2)
COL3	Gather, understand, analyses and document the software requirements.	Understanding (1)
COL4	Manage the software project development by staffing, scheduling and estimation techniques.	Understanding (1)
COL5	Understand the advance and emerging trends of software engineering.	Understanding (1)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
CLO1	H	L	L	L							M		L		L	
CLO2	M	M	L						M		M				M	
CLO3	M	M	L		L					M				M		
CLO4	M	L											L	M	L	
CLO5	L	L		L					L				M	M		

H: High, M: Medium, L: Low