

Branch Name:	Information and Communication Technology
Semester/Year:	Semester VI/ Third Year
Subject Title:	Software Engineering
Subject Code:	1ET1070601
Pre-requisite:	It is for absolute beginners. Though, awareness about software systems, software development process and computer fundamentals would be beneficial.

Course Objective:

- To understand software development life cycle
- To understand to gather & analyze requirement of client before developing system for them.
- Learn that how to use various diagrams to design and model your system before develop it.
- To learn testing techniques to improve quality the developed software

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
04	-	02	05	70	30	30	20	150

Subject Contents				
Sr. No	Topic	Total Hours	Weightage (%)	
1	Basics of Software Engineering: Define: Software and Software Engineering, Software Process, Software Engineering: A Layered Technology, Software Development life cycle (SDLC) and models: Water fall model, incremental model, RAD model, spiral model, Prototype model., Introduction to Agile process model, Agile development	07	20	
2.	Requirement Analysis: Requirement engineering, Analyze the problem and gathering requirement, Requirement engineering tasks, Functional and non functional requirement, Software requirement specification (SRS), Requirement modeling and its importance.	06	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.	08	20	
4.	Software Testing: Software testing concept, designing of test cases and Testing techniques, Unit testing, black box testing, white box testing,	08	20	

	testing web and mobile application, Testing tools (win runner, load runner), testing documentation.		
5.	Quality Management: Quality Concepts, Review Techniques, Software Reliability Quality Assurance-ISO 9000 Quality Standard, SQA Plan.	04	10
6	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	15

Course Outcome:

After learning this course student will understand the actual process of software developing. Student can analyze the whole software from initial phase. At the end of this course learner can test software quality via various testing techniques.

List of Text Books:

1. Roger S. Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Editions

List of reference books:

1. Ian Sommerville, Software engineering, Pearson education Asia
2. Rajib Mall, Fundamentals of software Engineering, Prentice Hall of India.

List of Suggested titles of Experiments (below mentioned practical are just for the reference purpose, Lab instructor can change according to requirement)

1. Study about various software development models.
2. Gathering and analyzing requirements of any two software system.
3. Prepare SRS for a software system.
4. Design activity and use case diagram for your system.
5. Design Data dictionary for your system.
6. Prepare class diagram and ER diagram for a system.
7. Design Data flow diagram for system.
8. Study about various testing techniques.
9. Prepare various test cases for any two system.
10. Study about different types of testing tools and discuss any two in details.

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>