ITE1005	Software Engineering-Principles and Practices	L	T	P	J	C
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Pre-requisite	**CSE1001**	**Syllabus version**				
		1.1				

Course Objectives:

- To understand the concepts of process, product and project development.
- To elucidate the knowledge of requirement analysis.
- To provide the knowledge of software design and testing.

Expected Course Outcome:

1) Analyze the software development life cycle.
2) Understand the software requirements engineering concepts.
3) Demonstrate the various software design concepts and understand different designs like architectural, structured, object oriented and user interface.
4) Apply software validation and testing for real time applications.
5) Discuss software maintenance issues and challenges.
6) Perform the software project management techniques and team management.
7) Understand and use different software case tools and provide quality assurance.

Student Learning Outcomes (SLO):	**2, 7**

[2] Having a clear understanding of the subject related concepts and of contemporary issues

[7] Having computational thinking

Module:1	**Fundamentals of Software Engineering**	**6 hours**

Software Engineering Fundamentals- Software processes: Software life-cycle and process models- Process assessment models- Overview of Project Management activities.

Module:2	**Requirements Engineering**	**7 hours**

Software requirements and specifications- Requirements elicitation- Requirements analysis modeling techniques- Functional and nonfunctional requirements- User requirements, System requirements, requirement validation and software requirement specification document.

Module:3	**Software Design**	**8 hours**

Fundamental design concepts and principles-Design characteristics-System Models-Context, Behavioral, Data and, Object models-Architectural design- System structuring, Control models, Structured design- Object-oriented analysis and design- User interface design

Module:4	**Software Validation**	**6 hours**

Validation planning- Testing fundamentals-Test plan Creation and test case generation- Black-box and white-box testing techniques, Unit testing, Integration, validation, and system testing- Object-oriented testing.

Module:5	**Software Maintenance and Reengineering**	**5 hours**
Software Evolution- Software maintenance, Characteristics of maintainable software-Reengineering		
Module:6	**Software Project management**	**5 hours**
Team management, Role identification and assignment, Project tracking, Team problem resolution; Software measurement and estimation techniques.		
Module:7	**CASE tools**	**5 hours**
Software quality assurance- Software configuration management Overview of SEICMM, ISO 9000, CMMI, PCMM, TQM and Six Sigma-Overview of CASE tools. Software tools and environments.		
Module:8	**Contemporary issues:**	**3 hours**
	Total Lecture hours:	**45 hours**

Text Book(s)	
1.	Ian Sommerville, Software Engineering, Ninth Edition, Pearson, 2013.
Reference Books	
1.	R. S. Pressman, Software Engineering- A Practitioner's Approach, Eighth Edition, Mc Graw Hill Higher Education, 2014.

Total Laboratory Hours	30 hours

Recommended by Board of Studies	12-08-2017		
Approved by Academic Council	No. 47	Date	05-10-2017