CSE3001	SOFTWARE ENGINEERING	L	T	P	J	C
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Pre-requisite	**NIL**	**Syllabus version**				
		v1.0				

Course Objectives:

1. To introduce the essential software engineering concepts involved
2. To impart skills in the design and implementation of efficient software systems across disciplines
3. To familiarize engineering practices and standards used in developing software products and components

Expected Course Outcome:

1. Explain the principles of the engineering processes in software development.
2. Develop the software projects through activities such as planning and scheduling.
3. Classify and specify the requirements for the software projects.
4. Design the prototype of the software projects.
5. Implement the software development processes activities from requirements to validation and verification.
6. Apply benchmarking standards in process and in product.

Student Learning Outcomes (SLO):	**1, 5, 6**	
Module:1	**OVERVIEW OF SOFTWARE ENGINEERING**	**5 hours**

Nature of Software, Software Engineering, Software process, project, product, Process Models Classical Evolutionary models, Overview of System Engineering

Module:2	**INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT**	**3 hours**

Planning scope, milestones deliverables, Risk Management, Metrics Measurement

Module:3	**MODELLING REQUIREMENTS**	**6 hours**

Requirements Engineering process Requirement Elicitation, System Modelling - Requirements Specification and Requirement Validation

Module:4	**SOFTWARE DESIGN**	**4 hours**

Design concepts and principles - Abstraction - Refinement - Modularity Cohesion coupling, Architectural design, Detailed Design Transaction Transformation, Refactoring of designs, Object-oriented Design User-Interface Design

Module:5	**VALIDATION and VERIFICATION**	**4 hours**

Strategic Approach to Software Testing, Testing Fundamentals Test Plan, Test Design, Test Execution, Reviews, Inspection Auditing

Module:6	**SOFTWARE EVOLUTION**	**4 hours**

Software Maintenance, Types of Maintenance, Software Configuration Management, Overview of RE-engineering Reverse Engineering

Module:7	**QUALITY ASSURANCE**	**2 hours**

Product Process Metrics, Quality Standards Models ISO, TQM, Six-Sigma

Module:8	**RECENT TRENDS**		**2 hours**
Recent Trends in Software Design/Specialized Software Testing, Related Tools and Standards			
	Total Lecture hours:	**30 hours**	

Text Book(s)	
1.	Roger Pressman, Software Engineering: A Practitioner's Approach, 7th Edition, McGraw-Hill, 2010.
Reference Books	
1.	Ian Sommerville, Software Engineering, 9th Edition, Addision-Wesley, 2016
2.	Pankaj Jalote, A Concise Introduction to Software Engineering, Springer, 2008
3.	William E. Lewis , Software Testing and Continuous Quality Improvement, Third Edition, Auerbach Publications, 2008
Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar	

List of Challenging Experiments (Indicative)		
1.	Work Break-down Structure (Process Based, Product Based, Geographic Based and Role Based)	3 hours
2.	Estimations Cost and Schedule	3 hours
3.	Entity Relationship Diagram, Context flow diagram, DFD (Structural Modeling and Functional Modeling)	4 hours
4.	State Transition Diagrams (Behavioral Modeling)	4 hours
5.	System Requirements Specification	4 hours
6.	UML diagrams for OO Design	4 hours
7.	Tools for Version Control	3 hours
8.	Black-box, White-box testing	3 hours
9.	Non-functional testing	2 hours
	Total Laboratory Hours	30 hours
Mode of assessment: Project/Activity		

Recommended by Board of Studies	04-04-2014		
Approved by Academic Council	No. 37	Date	16-06-2015