

Course code	Course Title	L	T	P	C
BITE307L	Software Engineering	3	0	0	3
Pre-requisite	NIL	Syllabus version			
		1.0			
Course Objectives:					
<ol style="list-style-type: none"> 1. To introduce software engineering methodologies and process models 2. To provide sound understanding of software development phases 3. To present software project management and related process activities 					
Course Outcomes:					
<ol style="list-style-type: none"> 1. Use appropriate software process models for given software project scenarios 2. Analyse software requirements and develop software requirements specification 3. Develop abstract models and architectural design for software development 4. Choose appropriate software testing and evolution strategies 5. Create an outline of software project management plan including risk, configuration and quality aspects 					
Module:1	Elementary concepts	6 hours			
Professional software development – Software engineering ethics – Process activities – Software specification, Software design and implementation, Software validation, Software evolution - Software process models.					
Module:2	Requirements Engineering	5 hours			
Functional requirements – Non-Functional requirements – Requirements engineering processes – Requirements elicitation – Requirements elicitation techniques: Interviewing, Ethnography – Requirements Specification – Requirements validation – Requirements change.					
Module:3	Software Design	7 hours			
Context models – Interaction models, Structural models, Behavioural models, Model-drive engineering, Architectural Design- Architectural Views-Architectural Patterns: Layered, Repository, Client-Server, Pipe and Filter, Overview of Design and Implementation.					
Module:4	Software Testing	5 hours			
Testing Fundamentals – Test Plan creation – Test case generation – Testing techniques: Black Box and White Box, Levels of Testing, Types of Testing, Validation and Verification – Object Oriented Testing – Test-Driven development.					
Module:5	Software Maintenance and Evolution	6 hours			
Evolution processes – Software Maintenance – Software Reengineering – Software reuse: Reuse landscape, Application frameworks, Application system reuse – Component-based software engineering.					
Module:6	Software Project Management	8 hours			
Risk Management: risk identification, risk analysis, risk planning, risk monitoring – Managing People – Project Planning – Process, Scheduling, Estimation techniques, Software configuration management, Software Quality, Software standards- the ISO 9001 standards framework.					
Module:7	Safety and Resilience Engineering	6 hours			
Overview of dependable systems, Safety-critical systems- Safety requirements – Safety Engineering processes – Security and organizations – Cyber security – Sociotechnical resilience.					
Module:8	Contemporary Issues	2 hours			

	Total Lecture hours:		45 hours
Text Book			
1.	Ian Sommerville, Software Engineering, 10 th Edition, Pearson Publisher, 2016.		
Reference Book			
1.	Roger Pressman, Software Engineering – A Practitioner’s Approach, Ninth Edition, McGraw Hill Higher Education, 2019.		
Mode of Evaluation: Continuous Assessment Tests, Assignment, Quiz, Final Assessment Test			
Recommended by Board of Studies		20-05-2022	
Approved by Academic Council		No. 66	Date 16-06-2022