



SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
 (AUTONOMOUS)
 Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by
 NAAC with 'A' Grade – 3.32 CGPA Recognized under 2(f) & 12(B) of UGC Act 1956,
 Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
 Seetharampuram, W.G. DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement
23CD5T02	Software Engineering	IV	CSE(DS)	6	2025-2026	09-07-2025
COURSE OUTCOMES						
1	Illustrate various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance. (K3)					
2	Analyze various software engineering models and apply methods for design and development of software projects. (K4)					
3	Develop system designs using appropriate techniques. (K3)					
4	Outline various testing techniques for a software project. (K2)					
5	Apply standards, CASE tools and techniques for engineering software projects. (K3)					
UNIT	Out Comes / Bloom's Level	Topic s No.	Topics/ Activity	Text Book/ Ref	Contact Hour	Delivery Method
I	CO – 1	SOFTWARE ENGINEERING OVERVIEW				
		1.1	Introduction: Evolution	T1, T2	1	Chalk & Board Power point presentations Video Lecture
		1.2	Software development projects	T1, T2	1	
		1.3	Exploratory style of software developments	T1, T2	1	
		1.4	Emergence of software engineering	T1, T2	1	
		1.5	Notable changes in software development	T1, T2	1	
		1.6	Computer system engineering	T1, T2	1	
		SOFTWARE LIFE CYCLE MODELS				
		1.7	Basic concepts, Waterfall model and its extensions	T1, T2	1	E-Learning through NPTEL Assignment
		1.8	Rapid application development	T1, T2	1	
		1.9	Agile development model, Spiral model	T1, T2	1	
Content beyond syllabus		1.10	Hybrid Models (Water-Scrum-Fall)	T1, R1	1	
Total					10	
II	CO – 2	SOFTWARE PROJECT MANAGEMENT				
		2.1	Software project management complexities	T1, T2	1	Chalk & Board Power point presentations Video Lecture
		2.2	Responsibilities of a software project manager	T1, T2	1	
		2.3	Metrics for project size estimation	T1, T2	1	
		2.4	Project estimation techniques, Empirical	T1, T2	1	
		2.5	COCOMO, Halstead's software science	T1, T2	1	
		2.6	Risk management	T1, T2	1	
		REQUIREMENTS ANALYSIS AND SPECIFICATION				
		2.7	Requirements gathering and analysis	T1, T2	1	E-Learning through NPTEL Assignment
		2.8	Software Requirements Specification (SRS)	T1, T2	1	
		2.9	Formal system specification	T1, T2	1	
		2.10	Axiomatic specification, Algebraic specification	T1, T2	1	
		2.11	Executable specification and 4GL	T1, T2	1	



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Content beyond syllabus	2.12	Requirements Elicitation	T1, T2	1	Test
			Total	12	
III	CO – 3	SOFTWARE DESIGN			Chalk & Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		3.1 Overview of the design process	T1, T2	1	
		3.2 How to characterize a good software design.	T1, T2	1	
		3.3 Layered arrangement of modules	T1, T2	1	
		3.4 Cohesion and Coupling	T1, T2	1	
		3.5 Approaches to software design	T1, T2	1	
		AGILITY			
		3.6 Agility and the Cost of Change	T1, T2	1	
		3.7 Agile Process, Extreme Programming (XP)	T1, T2	1	
		3.8 Other Agile Process Models	T1, T2	1	
		3.9 Tool Set for the Agile Process		1	
		FUNCTION-ORIENTED SOFTWARE DESIGN			
		3.10 Overview of SA/SD methodology	T1, T2	1	
		3.11 Structured analysis	T1, T2	1	
		3.12 Developing the DFD model of a system	T1, T2	1	
		3.13 Structured design	T1, T2	1	
		3.14 Detailed design, and Design Review	T1, T2	1	
		USER INTERFACE DESIGN			
		3.15 Characteristics of a good user interface	T1, T2	1	
		3.16 Basic concepts, Types of user interfaces	T1, T2	1	
		3.17 Fundamentals of component-based GUI development	T1, T2	1	
		3.18 User interface design methodology	T1, T2	1	
Content beyond syllabus	3.19	Next-Generation Agile Practices	T1, R2	1	
			Total	19	
IV	CO – 4	CODING AND TESTING			Chalk & Board Power point presentations Video Lecture E-Learning through NPTEL Assignment Test
		4.1 Coding, Code review	T1, T2	1	
		4.2 Software documentation	T1, T2	1	
		4.3 Testing, Black-box testing	T1, T2	1	
		4.4 White Box testing	T1, T2	1	
		4.5 Debugging	T1, T2	1	
		4.6 Program analysis tools	T1, T2	1	
		4.7 Integration testing, Testing object-oriented programs	T1, T2	1	
		4.8 Smoke testing, and some general issues associated with testing	T1, T2	1	
		SOFTWARE RELIABILITY AND QUALITY			
		4.9 Software reliability	T1, T2	1	
		4.10 Statistical testing	T1, T2	1	
		4.11 Software quality, Software quality management system	T1, T2	1	
		4.12 ISO 9000, SEI Capability maturity model	T1, T2	1	
		4.13 Few other important quality standards, Six Sigma	T1, T2	1	
Content beyond syllabus	4.14	Chaos Testing	T1, R2	1	



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Total					14	
V	CO – 5	COMPUTER-AIDED SOFTWARE ENGINEERING				Chalk & Board
		5.1	CASE and its scope, CASE environment	T1, R2	1	
		5.2	CASE support in the software life cycle	T1, R2	1	
		5.3	Characteristics of CASE tools	T1, R2	1	
		5.4	Towards second generation CASE Tool	T1, R2	1	
		5.5	Architecture of a CASE Environment	T1, R2	1	Power point presentations
		SOFTWARE MAINTENANCE				Video Lecture
		5.6	Characteristics of software maintenance	T1, R2	1	
		5.7	Software reverse engineering	T1, R1	1	
		5.8	Software maintenance process models	T1, R1	1	E-Learning through NPTEL
		5.9	Estimation of maintenance cost	T1, R2	1	Assignment
		SOFTWARE REUSE				
		5.10	Reuse- definition, introduction	T1, R2	1	
	5.11	Reason behind no reuse so far, Basic issues in any reuse program	T1, R2	1	Test	
	5.12	A reuse approach and Reuse at organization level	T1, R2	1		
Content beyond syllabus		5.13	Intelligent CASE (I-CASE) Tools	T1, R1	1	
Total				13		
Cumulative Proposed Periods				68		

Text Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Rajib Mall, "Fundamentals of Software Engineering", 5th Edition, PHI 2018.
2	Roger S. Pressman, "Software Engineering A practitioner's Approach", 9th Edition, McGraw Hill International Edition 2023.

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Ian Sommerville, "Software Engineering", 10th Edition, Pearson, 2021.
2	Deepak Jain, "Software Engineering, Principles and Practices", Oxford University Press, 2008.

Web Details:

1	https://nptel.ac.in/courses/106105087
2	https://www.tutorialspoint.com/software_engineering/index.htm
3	https://www.geeksforgeeks.org/software-engineering/
4	https://en.wikipedia.org/wiki/Software_engineering

	Name	Signature with Date
i. Faculty	Mr Ch Praveen	<i>Ch Praveen</i>
ii. Module Coordinator	Mr Ch R K Raju	<i>Ch R K Raju</i>
iii. Programme Coordinator	Dr. RVSV Prasad	<i>Dr. RVSV Prasad</i>

[Signature]
Principal