

1.	Course Title	Software Engineering		
2.	Course Code	CCPS3523		
3.	Status	Major		
4.	Credit Hour	3 (2+1) 2 lecture (2 hours lecture x 14 weeks) 1 tutorials (1.5 hours per x 14 weeks) using simulator & emulator supervised by tutor		
5.	Semester/Year	1/3		
6.	Prerequisites	CCPS2513 Data Structure		
7.	Teaching method:	Distance Learning (Electronic)		
8.	Evaluation	Assessment and Marking Percentage: Participation 5% Exercises 10% Mid Sem Exam 10% Project 25% Final Examination 50%		
9.	Lecturer			
10.	Objective of the Subject	To introduce a formal approach to the state-of-the-art techniques in software design and development and provide a means for students to apply the techniques using various tools.		
11.	Learning Outcomes	By the end of the subject, students should be able to: • identify and apply software engineering paradigm/model to solve the problems based on domain problems correctly. • apply software project management, software engineering, software quality assurance and software configuration management processes during developing the software. • write a good documentations, such as: software development plan, software requirements specifications, software design description, source code, software test plan, software test description, software test report, and software user manual and to review them. • make use of notation and techniques during requirement analysis and design. They will be able to perform software requirement analysis, design, coding, testing and maintenance. • build good application software based on standard procedures correctly and effectively.		
12.	Synopsis	The major areas of study include: Role of Software Engineering and Engineer, Software Engineering Paradigms, Software Project Management, Project Planning, Software Metrics, Software Requirement Analysis, Software Specifications, Software Design, Software Quality, Software Testing, Software Maintenance and Control, Computer Aided Software Engineering, and Software Development Project.		
13.	Topics	Details	Lecture (Hrs)	Tutorial (Hrs)
	Topic 1	Introduction Role of software engineering & engineer. Software Engineering Paradigms. Software Engineering & Models. Software engineering principles.	2	3
	Topic 2	Project Management Metrics. Estimation Model. Decomposition Technique & planning tools. Software Project Planning & Control: Gantt Chart, PERT/CPM & Others, Work Breakdown Structure (WBS).	5	3
	Topic 3	Requirement Analysis & Design Principles. Prototyping. Specification & Tools. Data Flow	7	3

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		Oriented. Transform Flow. Transaction Analysis. Data Structure Oriented. Logical Construction of system. Object-Oriented Design.		
	Topic 4	Software Specifications Classification of specification. Operational specifications: data flow diagram, state transition diagrams. Description specification: ER diagram, logic specification and algebraic specification.	3	3
	Topic 5	Software Quality Verification and validation. Test cases & design. Approaches to verification & testing. Debugging. Factors affecting quality. Review Techniques. Quality Metrics. Reliability & Performance. Quality Standards - ISO 9000 & Capability Maturity Model (CMM).	4	3
	Topic 6	Software Maintenance & Control Maintainability. Software Configuration Management. Monitoring & Controlling Projects Problems in maintenance & control. Evaluation.	4	3
	Topic 7	Computer Aided Software Engineering CASE tools - analysis tools, project management tools, configuration management tools, editors, linkers, code generators, debuggers, testing tools & user-interface management tools. Integrated CASE Environments. CASE Workbenches.	3	3
		Total contact hours	28	21
		Equivalent lecture hours	28	14
		Total lecture hours	42	
		Credit hours	3	
14.	Main reference: Textbook:	1. Hans van Vliet , Software Engineering: Principles and Practice (2008) 2. Ian Sommerville, Software Engineering: (Update) (8th Edition) (International Computer Science Series) (2006)		
15.	Additional References:	1. Ian Sommerville, Software Engineering: (Update) (8th Edition) (International Computer Science Series) (2006) 2. Stephen R. Schach, Object-oriented and Classical Software Engineering (2006)		
	Other Materials:	All materials will be available to the students online.		