

Bachelor of Computer Sciences (Hons) in Computer Networking

1.	Name of Course	Software Engineering				
2.	Course Code	CCPS2583				
3.	Name(s) of academic staff					
4.	Rationale for the inclusion of the course/module in the programme	Major To introduce student to the principles and techniques involved in working as part of a team, planning, specifying, designing, testing and documenting a software package by means of different engineering approach. The student is expected to realise the problems involved in designing and building significant computer systems; understand the need to design systems that fully meet the requirements of the intended users.				
5.	Semester and Year offered	2/2				
6.	Total Student Learning Time (SLT)	Face to Face				Total Guided and Independent Learning
	L = Lecture T = Tutorial P = Practical O= Others	L	T	P	O	Independent = 84 Total =126
		28	14			
7.	Credit Value	3				
8.	Prerequisite (if any)	CCP0103 Data Structure				
9.	Objectives: To provide an appreciation of the difficulties inherent in the construction of large scale software systems, and an understanding of how the basic principles of software engineering can help to overcome these difficulties in practice.					
10.	Learning outcomes: On completion of the module a student will be expected to be able to: - analyze the problems inherent in the design of large scale software systems, and Evaluate the available options to select the most suitable technology for use in each stage of the software lifecycle - Describe the different phases in the software lifecycle, and discuss the pros and cons of different models of software construction - Discuss the major methodologies techniques and tools that are appropriate to each of the phases of the software lifecycle, and be able to distinguish the contexts in which they can be suitably applied. - Manage and coordinate a team working on a software development project. - Provide a user document describing how the package would work, and deliver an effective oral presentation.					
11.	Transferable Skills: - Evaluate the available options to select the most suitable technology for use in each stage of the software lifecycle - Propose appropriate actions for managing and coordinating a software development team. - Communicate, organize and work as a productive member of a cohesive software development team - Consider the quality assurance and legal requirements for developing a software package.					

12.	Teaching-learning and assessment strategy A variety of teaching and learning strategies are used throughout the course, including: - Classroom lessons. Lectures and Power Point presentations - Tutorial sessions: Practice exercises - brainstorming; - student-Lecturer discussion - collaborative and co-operative learning; - Independent study. Assessment strategies include the following: - Ongoing quizzes - Midterm tests - Performance Assessment (project, Assigned exercises) - Lecturer Observation																																			
13.	Synopsis: This module aims to equip students with the main principles of software engineering, including subjects in software requirements, Role of Software Engineering and Engineer, Software Engineering Paradigms, Software Project Management, Project Planning object-oriented analysis and design, software validation and testing, and software maintenance and evolution.																																			
14.	Mode of Delivery: - Classroom lessons. Lectures and Power Point presentations - Tutorial sessions: Practice exercises																																			
15.	Assessment Methods and Types: The assessment for this course will be based on the following: Coursework 50% - quizzes and assignments 10% - Project 15% - Mid-Semester Exam 25% Final Examination <u>50%</u> 100%																																			
16.	Mapping of the course/module to the Programme Aims <table><tr><td>A1</td><td>A2</td><td>A3</td><td>A4</td><td>A5</td><td>A6</td><td>A7</td><td>A8</td><td>A9</td></tr><tr><td>4</td><td>2</td><td>2</td><td>1</td><td>0</td><td>1</td><td>1</td><td>2</td><td>0</td></tr></table>												A1	A2	A3	A4	A5	A6	A7	A8	A9	4	2	2	1	0	1	1	2	0						
A1	A2	A3	A4	A5	A6	A7	A8	A9																												
4	2	2	1	0	1	1	2	0																												
17.	Mapping of the course/module to the Programme Learning Outcomes <table><tr><td>LO1</td><td>LO2</td><td>LO3</td><td>LO4</td><td>LO5</td><td>LO6</td><td>LO7</td><td>LO8</td><td>LO9</td><td>LO10</td><td>LO11</td><td>LO12</td></tr><tr><td>2</td><td>0</td><td>0</td><td>1</td><td>3</td><td>0</td><td>1</td><td>2</td><td>2</td><td>1</td><td>0</td><td>0</td></tr></table>												LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	2	0	0	1	3	0	1	2	2	1	0	0
LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12																									
2	0	0	1	3	0	1	2	2	1	0	0																									
18.	Content outline of the course/module and the SLT per topic <table><tr><th rowspan="2"></th><th rowspan="2">Details</th><th colspan="4">SLT</th></tr><tr><th>L</th><th>T</th><th>Indep.</th><th>Total</th></tr><tr><td>Topic 1</td><td>Introduction Role of software engineering & engineer. Software Engineering Paradigms. Software Engineering & Models. Software engineering principles.</td><td>2</td><td>1</td><td>6</td><td>9</td></tr><tr><td>Topic 2</td><td>Project Management Metrics. Estimation Model. Decomposition Technique & planning tools. Software Project Planning & Control: Gantt Chart, PERT/CPM & Others, Work Breakdown Structure (WBS).</td><td>6</td><td>3</td><td>18</td><td>27</td></tr></table>													Details	SLT				L	T	Indep.	Total	Topic 1	Introduction Role of software engineering & engineer. Software Engineering Paradigms. Software Engineering & Models. Software engineering principles.	2	1	6	9	Topic 2	Project Management Metrics. Estimation Model. Decomposition Technique & planning tools. Software Project Planning & Control: Gantt Chart, PERT/CPM & Others, Work Breakdown Structure (WBS).	6	3	18	27		
	Details	SLT																																		
		L	T	Indep.	Total																															
Topic 1	Introduction Role of software engineering & engineer. Software Engineering Paradigms. Software Engineering & Models. Software engineering principles.	2	1	6	9																															
Topic 2	Project Management Metrics. Estimation Model. Decomposition Technique & planning tools. Software Project Planning & Control: Gantt Chart, PERT/CPM & Others, Work Breakdown Structure (WBS).	6	3	18	27																															

Bachelor of Computer Sciences (Hons) in Computer Networking

	Topic 3	Requirement Analysis & Design Principles. Prototyping. Specification & Tools. Data Flow Oriented. Transform Flow. Transaction Analysis. Data Structure Oriented. Logical Construction of system. Object-Oriented Design.	6	3	18	27
	Topic 4	Software Specifications Classification of specification. Operational specifications: data flow diagram, state transition diagrams. Description specification: ER diagram, logic specification and algebraic specification.	4	2	12	18
	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	2	12	18
	Topic 6	Software Maintenance & Control Maintainability. Software Configuration Management. Monitoring & Controlling Projects Problems in maintenance & control. Evaluation.	4	2	12	18
	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.	2	1	6	9
		Total	28	14	84	126
19.	Main references supporting the course: Hans van Vliet, Software Engineering: Principles and Practice (2008)					
	Additional references supporting the course: - Ian Sommerville, Software Engineering: (Update) (8th Edition) (International Computer Science Series) (2006) - Stephen R. Schach, Object-oriented and Classical Software Engineering (2006)					
20.	Other additional information All materials will be available to the students online.					