

Criterion: II – Teaching, Learning and Evaluation Metric: 2.6.1–Student Performance and Learning Outcomes Evaluating the Attainment of Programme Outcomes Year: 2018-2023

The assessment of learning outcomes is a valuable tool for improving the quality of education and the institutional accountability. The lesson plans are prepared taking into account the course outcomes and the apt pedagogy to achieve them. The Course Outcomes are mapped with the Programme Specific Outcomes and the Programme Outcomes and the mean value clearly states that the Course Outcomes strongly align with the Programme Outcomes and the Programme Specific Outcomes. The institution adopts various indices for measuring the attainment of COs, PSOs & POs. The well-designed curriculum considers the distinct graduate attributes. Both the CIA and the ESE question papers for each courses carry knowledge based and application/creativity-based questions that test the higher order thinking skills of the students which are an integral part of learning at every stage of development. The evaluation is done based on the centralized assessment rubrics. The marks attained by the students in the CIA & ESE are calculated using the CO, PSO, PO mapping values and grades are released based on the CGPA. The comprehensive synthesis of the assessment rubrics, the pass percentage, the number of students opting for higher studies and the number of students employed are the key components in the analysis of the level of attainment of COs, PSOs and the POs. The mapping of COs, PSOs and POs measure students' acquired knowledge in the specific disciplinary domains.

Principal St. Mary's College (Autonomous) Thoothukudi-628 001.

Criterion II

SSR Cycle V

Attainment of Programme Outcome

B.SC COMPUTER SCIENCE

Mapping of C Programming

		Sen	iester I										
	Co	re – I	C Programmin	ıg									
Course Code:21UCSC11	Hrs / weel	x : 4	Hrs / Semester	: 60	Credit	Credits : 4							
Learning Objectives	 Understand the concepts of Structured programming language To understand the basic programming concepts. To develop programming skills using the C language. 												
Blue Print of the question paper	Section	Unit I	Unit II	Uni	t III	Unit IV	Unit V						
	Section A	2	2	,	2	2	2						
	Section B Any FIVE	2	2		1	1	1						
	Section C Either OR	2	2		2	2	2						
	Section D Any THREE	1	1		1	1	1						

Unit	Contents	Hours
Unit I	 Algorithms - Flow charts: Developing algorithms and flowcharts for solving simple problems. Introduction to C C Fundamentals: The C Character Set - Identifiers and Keywords - Data Types –Constants– Variables and Arrays - Declarations - Expressions - Statements - Symbolic Constants. Operators and Expressions: Arithmetic Operators - Unary Operators - Relational and Logical Operators - Assignment Operators - The Conditional Operator - Library Functions 	12

Unit II	Data Input and Output: Single Character Input-The getchar Function- Single Character Output- The putchar Function-Entering Input Data-More about the scanf function-Writing output data – The printf function- The scanf Function-More about the printf function -The gets and puts Functions. Control Statements: Branching: The if-else Statement-Looping: The While Statement-More Looping: The do-while Statement-Still More Looping: The for Statement-Nested Control Structures-The switch Statement-The break Statement-The continue Statement-The comma Operator-The go to Statement.	12
Unit III	Functions:Defining a Function-Accessing a Function-FunctionPrototypes-PassingArgumentstoaFunction-Recursion.ProgramStructure:StorageClasses-AutomaticVariables-External (Global)Variables-StaticVariables.Arrays:Defining an Array-Processing an Array - PassingArrays toFunctions-MultidimensionalArrays - Arrays and Strings.	12
Unit IV	 Pointers: Fundamentals-Pointer Declarations- Passing Pointers to Functions- Pointers and One- Dimensional Arrays-Dynamic Memory Allocation- Operations on Pointers-Pointers and Multidimensional Arrays - Arrays of pointers-Passing Functions to Other Functions Structures and Unions: Defining a Structure - Processing a Structure - User Defined Data types (typedef) - Structures and Pointers - Passing Structures to Functions. 	12
Unit V	Opening and Closing a Data File-Creating a Data File-Processing a Data - Unformatted Data Files.	12
Text Book	Byron Gottfried, <i>Programming with C</i> . India : McGraw Hill Education Priva Limited.Third rd Edition 2017. Chapters: 2,3,4,6,7,8,9,10,11,12 and 13.	te
Refernce Books & Web Resources	 Ashok N. Kamthane, <i>Programming with ANSI and Turbo</i>. New Delhi Pearson education. Third Edition 2008. Venugopal K R and Sudeep R Prasad .<i>Mastering C</i>. India: Tata McGr Hill. Second Edition, 2017. E. Balagurusamy, <i>Programming in ANSI C</i>. India:McGraw Hill Education Private Limited, Eighth Edition 2019. <u>computer-fundamental/algorithm-and-flowchart.htm</u> <u>https://www.geeksforgeeks.org/an-introduction-to-</u> flowcharts 	: aw

Course Outcome	Upon completion of this course, students will be able to	CL
CO-1	draw the flow chart for the given problem and algorithm	Un
CO-2	describe the various operators and library functions and to define I/O functions	Un
CO-3	compare and contrast loops	An
CO-4	implement recursion	Ар
CO-5	understand the concept of storage classes	Un
CO-6	implement different operations on arrays	Ар
CO-7	develop an application using pointers and structures	Cr
CO-8	describe the file operations	Un

					PO										PSO					
	РО- 1	РО- 2	РО- 3	РО- 4	РО- 5	РО- 6	РО- 7	PO- 8	Avg	PSO- 1	PSO- 2	PSO- 3	PSO- 4	PSO- 5	PSO- 6	PSO- 7	PSO- 8	PSO- 9	PSO- 10	Avg
CO- 1	3	3	3	3	3	2	3	2	2.8	3	3	3	3	3	2	2	2	2	1.5	2.5
CO- 2	3	3	3	3	3	1.8	2	2.5	2.7	3	3	3	2	2	2.5	2.6				
CO- 3	3	3	3	3	3	1.5	1	2.5	2.5	3	3	3	3	3	2.5	1.5	2	2	2.5	2.6
CO- 4	3	3	3	3	3	1.5	2.5	2.5	2.7	3 3 3 3 3 2.5 2.5							2	2	2.5	2.7
CO- 5	3	3	3	3	3	2	2.5	3	2.8	3	3	3	3	3	2.5	2	2	2	3	2.7
CO- 6	3	3	3	3	3	2	2	2.5	2.7	3	3	3	3	3	2.8	2	2	2	3	2.7
CO- 7	3	3	3	3	3	2	1.5	2.5	2.6	3	3	3	3	3	3	2	2	2	2.5	2.7
CO- 8	3	3	3	3	3	2	1.5	2.5	2.6	3 3 3 3 3 3 2 2									2.5	2.7
	PO Mean 2.										PSO Mean									2.6
Strer	Strength of PO Correlation Strong									Streng	Strength of PSO Correlation Strong									

Course Outcomes				Pro	grai	nme	Programme Specific Outcomes (PSO)											
C Programming	3	3	3	3	3	2	2	2.5	3	3	3	3	3	2.5	2	2	2	2.5
Discrete Mathematics	3	2	2	3	3	2	2	1	3	2	2	3	2	2.5	2	1	3	2.5
C ++ Programming	3	2	3	3	3	2	2	2.5	3	3	3	3	3	3	2.5	1.5	3	2.5
Digital Principles	3	2	3	3	3	2	2	1	3	2	2	2	2	2.5	1	1.5	3	2
JAVA Programming	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	1.5	3	3
Computer Architecture	3	2	2	2	3	2	2	1	3	2	1.5	3	2	2.5	2	1.5	3	1.5
Data Structures	3	3	3	2	3	2	2.5	2	3	3	2	3	3	3	2.5	1.5	3	2
Microprocessors	3	3	3	2	3	2	2.5	2	3	3	1.5	3	3	2.5	2	1.5	3	2
Web Designing with HTML	3	3	3	2	3	2	3	3	3	3	2	3	3	2.5	3	1.9	3	3
Python Programming	3	3	3	3	3	2	3	3	3	3	2	3	3	3	3	1.5	3	3

RDBMS	3	2	3	2	3	2	2	1.5	3	2	3	2	2.5	3	2	1.5	3	1.6
Resource Management Techniques	3	2	3	3	3	2	2	1.5	3	2	2	2	2.5	2	2	1.5	3	1.5
Web Technology	3	3	3	2	3	2	3	3	3	3	2	3	3	3	3	1.5	3	3
Mathematical Reasoning	3	1	2	2	3	2	2	2.5	3	2	3	2	2.5	2	2	1.5	3	2.5
Computer Oriented Numerical Methods	3	1	3	3	3	2	2	2	3	2	3	2	2.5	1.5	2	1.5	3	2.5
Operating Systems	3	1	1	2	3	2	2	2	3	2	3	2	2.5	1.5	3	1.5	3	1.5
Programming with PHP and MySQL	3	3	2	2	3	2	3	3	3	3	3	3	3	3	3	1.5	3	2
Data Mining	3	1	1	2	3	2	2	2	3	1.5	3	2	2.5	1.5	2	1.5	3	2
ASP.NET	3	3	2	2	3	2	3	3	3	3	3	3	3	3	3	1.5	3	3
Android Programming	3	3	2	2	3	2	3	3	3	3	1.5	3	3	2	3	1.5	3	3
Software Engineering	3	1	1	2	3	2	2.5	2	3	1.5	2	2	2	1.5	2	3	3	2
Computer Networks	3	2	1. 5	2	3	2	2.5	2	3	2.5	2	2	2	1.5	3	1.5	3	2
Cloud Computing	3	2	1.5	2	3	2	2.5	2.5	3	2	2	2.5	2	2.5	3	1.5	3	2
Average Correlation	3.0	2.2	2.3	2.3	3	2	2.4	2.2	3	2.5	2.4	2.6	2.6	2.4	2.4	1.6	3	2.3
Mean Overall Score	2.5	The I	POs a	and PS	SOs	are s	trong	ly cor	relate	d wit	h the	Cos	of the	prog	ramm	ie		

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Master of Science (Computer Science)

Mapping of 21PCSC11- DESIGN AND ANALYSIS OF ALGORITHMS

Objectives:

- To be technologically adept, innovative and be able to develop new algorithms.
- To understand the course of the algorithm, its features and complexity
- To compare different algorithms for the same problem.

Course Outcomes:

CO.No.	Upon Completion of this course, students will be able to	PSOs Addressed	CL
CO-1	Analyze the running time and space complexity of algorithms using asymptotic analysis.	1,3	An
CO-2	Understand different tree traversals, graph traversals and spanning tress.	1,3	Un
CO-3	Apply divide and conquer to binary search, quick sort, merge sort.	3	Ар
CO-4	Apply greedy method to knapsack problem, prims, kruskal algorithms.	3	Ар
CO-5	Apply dynamic programming to optimal binary search trees,0/1 knapsack problem, etc.	3	Ар
CO-6	Apply Backtracking ton-queen problem, sum of subsets problem, graph coloring etc.	3	Ар
CO-7	Apply branch and bound to Travelling sales person problem, 0/1 knapsack problem.	3	Ар
CO-8	Classify the notions of P, NP, NP-complete, and NP-hard	3	An

Mapping of CO with PO and PSO

C O	Pı	rogran	nme (Outcon	nes (P	0)			Pro	gramm	e Specif	fic Outc	omes (F	PSO)		Mean Scores of CO	
	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PO-	PSO-	PSO-	PSO-	PSO-	PSO-	PSO-	PSO-	PSO-	-
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
CO-1	3	3	2	2	2	2	2	2	2	2	3	2	3	3	2	2	2.3
CO-2	3	3	2	2	2	2	2	2	2	2	3	2	3	3	2	2	2.3
СО-3	3	3	3	3	2	2	2	2	3	3	3	2	3	3	2	2	2.6
CO-4	3	3	3	3	2	2	2	2	3	3	3	2	3	3	2	2	2.6
CO-5	3	3	3	3	2	2	2	2	3	3	3	2	3	3	2	2	2.6
CO-6	3	3	3	3	2	2	2	2	3	3	3	2	3	3	2	2	2.6
CO-7	3	3	3	3	2	2	2	2	3	3	3	2	3	3	2	2	2.6
CO-8	3	3	3	3	3	3	2	2	3	3	3	3	3	3	2	2	2.8
Mean Overall Score											2.6						
Result													High				

Assessment Pattern

Blooms Category	CA Tests(Ma	rk Allotment)	Term End Exam(75)			
	I CIA(30)	II CIA(30)	Marks Allotment			
Remember	10	10	10			
Understand	10	10	10			
Apply	20	20	25			
Analyze			30			
Evaluate						

Course Content

UNIT-I: Introduction

Introduction – Performance Analysis - Divide and conquer Method: Binary Search, Finding Maximum and Minimum, Merge Sort and Quick Sort.

UNIT - II: Greedy Methods

Greedy Methods: Knapsack Problem, Minimum Cost Spanning Trees, Optimal Storage on Tapes and Single Source Shortest Path Problem-**Net Exam Related Problems**.

UNIT - III : Dynamic Programming & Basic Traversal and Search Techniques

Dynamic Programming: Multistage Graphs, 0/1 knapsack and Traveling Salesman Problem. Basic Traversal and Search Techniques: Techniques for Binary Tree Techniques for Graphs: Depth First Search and Breadth First Search - Connected Components and Spanning

Tree-Net Exam Related Problems

UNIT - IV : Backtracking

Backtracking: 8 Queens Problems, Sum of Subsets, Graph Colouring, Hamiltonian Cycle and Knapsack Problem.

UNIT - V: Branch- and- Bound

Branch and Bound: Least Cost Search. Bounding: FIFO Branch and Bound and LC Branch and Bound.0/1 Knapsack Problem,

Travelling Salesman Problem.

Text Book

1. E.Horowitz, S.Sahni and Sanguthevarrajasekaran. *Fundamentals of Computer Algorithms*, 2nd edition, Universities Press, 2008.

Reference Books:

- 1. S. K. Basu. Design Methods and Analysis of Algorithms. PHI, 2005.
- 2. Goodman and S. T. Hedetniem. Introduction to the Design and Analysis of Algorithms. MGH, 1977.
- 3. A.V. Aho, J.D. Ullman and J.E.Hospcraft. The Design and Analysis of Computer Algorithms, Pearson Education.

Programme: M.Sc. Computer Science

Sem	Course	Course Title	PO	PO	PO	PO-	PO-	PO-	PO-	PO-	PSO-	PSO-	PSO	PSO	PSO	PSO	PSO	PSO
	Code		_1	-2	_3	4	5	6	7	8	1	2	_3	_4	-5	-6	_7	-8
			1		5			Ŭ	<i>'</i>	0	1	2	5		5	Ŭ	/	0
1	21PCSC11	Design and Analysis of Algorithms	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.8	2.3	2.3	2.6	2.6	2.6	2.6	2.6	2.8
1	21PCSC12	Digital Image processing using MATLAB	2.4	2.5	2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.4
1	21PCSC13	Mathematical Foundations for Computer Science	2.5	2.5	2.5	2.5	2.5	2.6	2.9	2.9	2.4	2.6	2.4	2.6	2.4	2.5	2.8	2.8
1	21PCSC14	Compiler Design	2.3	2.1	2.4	2.4	2.5	2.3	2.5	2.4	2.3	2.2	2.3	2.3	2.6	2.3	2.6	2.3
1	21PCSE11	Elective I - Advanced computer Architecture	2.3	2.5	2.6	2.8	2.5	2.8	2.8	2.8	2.3	2.6	2.6	2.8	2.5	2.8	2.8	2.8
1	21PCSE12	Elective I -Cryptography & Network Security	2.3	2.4	2.4	2.4	2.4	2.6	2.6	2.5	2.3	2.4	2.5	2.4	2.5	2.7	2.7	2.6
2	21PCSC21	J2EE	2.5	2.5	2.5	2.3	2.4	2.4	2.3	2.3	2.5	2.5	2.5	2.1	2.2	2.2	2.1	2.4
2	21PCSC22	Data Mining & R Programming	2.4	2.4	2.4	2.5	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.3	2.3	2.3	2.3
2	21PCSC23	DDBMS	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4
2	21PCSC24	Single Board Computers and IoT	2.6	2.6	2.3	2.6	2.3	2.6	2.6	2.6	2.5	2.5	2.3	2.5	2.3	2.6	2.5	2.6
2	21PCSE21	Elective II- Advanced Computer Networks	2.3	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.3	2.4	2.4	2.4	2.6	2.6	2.6	2.6
2	21PCSE22	Elective II- Soft Computing	2.2	2.2	2.2	2.1	2.3	2.2	2.1	22	2.2	2.2	2	2	2.5	2	2.2	2
3	21PCSC31	Software Testing	2.3	2.3	2.3	2.2	2.1	2.1	2.5	2.2	2.6	2.3	2	2.6	2	2	2.2	2.3
3	21PCSC32	Cloud Computing & Big Data	2.3	2.2	2.2	2.3	2.1	2.2	2.2	2.3	3	2	2	2.3	2	2	2.3	2.6
3	21PCSC33	Data Science using Python	2.2	2.5	2.2	2.2	2.3	2.5	2.3	2.5	2	3	2	2	2	2.5	2	2.5
3	21PCSC34	Research Methodology	2.1	2	2.5	2.2	2.1	2.2	2.2	2.1	2	2	2.7	2	2.2	2.2	2	2
3	21PCSE31	Elective III- Organizational Behaviour	2.2	2.3	2.2	2.2	2.5	2.3	2.6	2.2	2	3	2	2	2	2	2	3
3	21PCSE32	Elective III- Object Oriented Software Engineering	2.2	2.1	2.2	2.5	2.3	2.2	2.5	2.3	2.8	2	2.1	2.1	2.7	2.1	2.1	2.7
3	21PCSSS1	Course for Competitive Exams	2.3	2.5	2.2	2.6	2.3	2.2	2.3	2.2	2.5	2.5	2.3	2.8	2.3	2.1	2.3	2.1
		Average Score	2.3	2.4	2.4	2.4	2.4	2.4	2.5	3.5	2.4	2.4	2.3	2.4	2.3	2.3	2.4	2.5
		Mean Overall Score	2.5	Hen	ce the	PO, PS	SOs stro	ongly co	orrelate	e with o	verall co	urses						

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