

Sadakathullah Appa College

(Autonomous)

(Reaccredited by NAAC at an 'A' Grade. An ISO 9001:2015 Certified Institution)

Rahmath Nagar, Tirunelveli - 11.
Tamil Nadu.

DEPARTMENT OF COMPUTER SCIENCE



CBCS SYLLABUS

For

B.Sc. COMPUTER SCIENCE

(Applicable for students admitted in June 2021 and onwards)

(As per the Resolutions of the Academic Council Meetings

held on . . . 2021)

Department of Computer Science
Programme : B.Sc.
Programme Learning Outcomes

PLO 1: Disciplinary Knowledge

- Acquire scientific knowledge and an understanding of major concepts and theoretical principles.

PLO 2: Creative Thinking and Practical Skills / Problem-Solving Skills

- Enrich skills of observation/research-related skills to draw logical inferences from scientific experiments/ programming and skills of creative thinking to develop novel ideas.
- Hone problem-solving skills in theoretical, experimental, and computational areas and apply them in research fields and real-life situations.

PLO 3: Sense of inquiry and Skilled Communicator

- Develop the capability to raise appropriate questions relating to the current/emerging issues encountered in the scientific field and plan, execute, and express the results of experiments / investigations through technical writings and oral presentations.

PLO 4: Ethical Awareness / Team Work / Environmental Conservation and

Sustainability

- Equip them for conducting work as an individual / as a member, or as a leader in diverse teams upholding values such as honesty and precision and thus preventing unethical behaviors such as fabrication, falsification, misrepresentation of data, plagiarism, etc. to ensure academic integrity.
- Realize that environment and humans are dependent on one another and know about the responsible management of our ecosystem for survival and the well-being of the future generation.

PLO 5: Usage of ICT/ Lifelong Learning / Self-Directed Learning

- Inculcate the habit of learning continuously through the effective adoption of ICT to update knowledge in the emerging areas in Sciences for inventions/discoveries and engage in remote/independent learning.

Programme Specific Outcomes

PSO	Upon completion of B.Sc. Computer Science Degree Programme, the students will be able to:	PLOs Mapped
PSO-1	Develop sufficient skills with ethical concerns in programming, multimedia, animation, and networking through various concepts of computer languages.	1,4,5
PSO-2	Build the basic knowledge of computer organization, digital computers, and circuits to apply and solve real-time problems in research fields.	1,2,3
PSO-3	Illustrate the nature of the software development process, testing, and effective document preparation to address the current issues encountered in the scientific fields.	1,3
PSO-4	Distinguish and explain data distribution concepts with networking to equip themselves as individuals or as a team.	2,4
PSO-5	Construct their knowledge to apply mathematical concepts on typical computing applications besides developing web pages through self-directed learning using various technologies.	1,5

CBCS Syllabus – B.Sc. Computer Science (2021-22 onwards)

SEM	Part	P	Title of the paper	S. Code	H/W	L*	T*	P*	C	Marks		
										I	E	T
I	I	I L-I	இக்காலத்தமிழ்	21ULTA11	6				3			
			Grammar and Translation - I	21ULAR11								
	II	II L-I	Communicative English -I	21ULEN11	6				3			
	III	DSC-I	C Programming	21UCCS11	4				4			
	III	DSC-II	Discrete Mathematics	21UCCS12	4				4			
	III	P-I	C-Programming Practical	21UCCS1P1	2				1			
	III	A-I/1	Office Automation	21UACS11	4				3			
	III	A-I/1P	Office Automation Practical	21UACS1P1	2				1			
	IV	AECC-I	Value Education-I	21USVE1A	2				2			
Value Education-II	21USVE1B											

Semester – I

Course Title	C Programming
Total Hrs	60
Hrs/Week	4
Sub.Code	21UCCS11
Course Type	C I
Credits	4
Marks	100

General Objective:

To understand the tools and features of the programming language to design programs and develop software.

Course Objectives: The learners will be able to:

CO	Course Objectives
CO-1	Understand the basic concepts of C Programming.
CO-2	Distinguish loops and conditional statements
CO-3	Classify arrays and strings.
CO-4	Apply the concepts of built-in functions and develop user-defined functions in C Programming.
CO-5	Categorize, besides pointers, the structures, and union.

UNIT I

Character Set – C tokens – Keywords and Identifiers – Constants, Variables, data types-Declaration of variables – declaration of storage classes – Assigning values to the variables – defining symbolic constants – Declaring a variable as constant – Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and decrement operators – Conditional operators – bitwise operators – Special operators – Arithmetic expressions – evaluation of expressions – precedence of Arithmetic operators-Type conversions in expressions – Mathematical functions.

UNIT II

Decision Making – If Statement – The If-else statement – Nesting of If statement – The else-if ladder – the switch statement – the ?: operator – the goto statement-Decision making and looping – the while statement – the do statement – the for statement – jumps in loops.

UNIT III

Arrays – one dimensional, two dimensional, and multi dimensional arrays – Dynamic arrays – Character arrays and strings – Declaring and initializing string variables – Reading string from terminals – string handling functions.

UNIT IV

User-defined functions – Category of functions – Nesting of functions – Recursive functions – Passing arrays, strings to functions – the scope, visibility, and lifetime of variables.

UNIT V

Structure and Unions – Accessing structure members – Arrays of structures – Arrays within structures – Unions – bit fields – pointers – pointer expressions – pointers and arrays – pointers and character strings – Array of pointers – pointers and structures.

TEXT BOOK:

Computing Fundamentals and C Programming – E Balagurusamy –Tata McGraw – Hill Publishing Company.

Course Outcomes

Course Outcomes: The learners would have learned to:

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Identify the use of basic concepts of C programming.	1,5	Understanding
CO-2	Develop their knowledge to design programs using loops and conditional statements.	1,5	Applying
CO-3	Apply the concepts of arrays and strings in real-time applications.	1,5	Applying
CO-4	Explain the concepts of built-in and user-defined functions in C Programming.	1,5	Analyzing
CO-5	Assess structures, unions, and pointers to manage memory locations effectively.	1,5	Evaluating

Relationship Matrix

Semester	Course Code	Title of the Course					Hours	Credit		
I	21UCCS11	C Programming					60	4		
Course Outcomes (COS)	Programme Learning Outcomes (PLOs)					Programme Specific Outcomes (PSOs)				
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	✓			✓	✓	✓				✓
CO-2	✓			✓	✓	✓				✓
CO-3	✓			✓	✓	✓				✓
CO-4	✓			✓	✓	✓				✓
CO-5	✓			✓	✓	✓				✓
Number of matches (✓) =25 Relationship = Low/ Medium /High										

Prepared by
Mrs. S. Fathima Suhara
Name and Signature

Checked by
Head of the Department

Semester – I

Course Title	Discrete Mathematics
Total Hrs	60
Hrs/Week	4
Sub.Code	21UCCS12
Course Type	C – II
Credits	4
Marks	100

General Objective:

To understand and apply the basic concepts of mathematical principles to solve practical problems.

Course Objectives: The learners will be able to:

CO	Course Objectives
CO-1	Understand the concepts and principles of sets.
CO-2	Understand the relations and their types.
CO-3	Apply the logical statements in mathematical principles.
CO-4	Apply the concepts of vectors and matrices to solve problems.
CO-5	Categorize the various types of graphs and their applications to solve real-time issues.

Unit – I Set theory:

Sets and elements, Universal Set and Empty Set, Subsets, Venn Diagrams, Set Operations, Algebra of Sets and Duality, Finite, Infinite Sets and Counting Principle, The Inclusion-Exclusion Principle, Classes of Sets, Power Sets, Partitions.

Unit – II Relations:

Product Sets, Relations, Picture Representations of Relations, Composition of Relations, Types of Relations, Closure Properties, Equivalence Relations, Partial Ordering Relations.

Unit – III Logic and Propositional Calculus:

Propositions and Compound Propositions, Basic Logical Operations, Propositions and Truth Tables, Tautologies and Contradictions, Logical Equivalence, Algebra of propositions, Conditional and Biconditional statements, Arguments, Logical Implication.

Unit – IV Vectors and Matrices:

Vectors, Matrices, Matrix Addition and Scalar Multiplication, Matrix Multiplication, Transpose, Square Matrices, Invertible(Non-singular) Matrices, Inverses, Determinants, Boolean(Zero-One) Matrices.

Unit – V Graph Theory:

Graphs and Multigraphs, Subgraphs, Paths, Connectivity, Euler graph, Hamiltonian graph, Labeled and Weighted graphs, Complete, Regular and Bipartite graphs, Tree graphs, Planar graphs.

Textbooks:

Discrete Mathematics – Seymour Lipschutz and Marc Lars Lipson - Schaum’s Series – Third Edition – Tata McGraw Hill Publications.

Reference Books:

1. Modern Algebra - Arumugam and Isaac, SciTech Publication.
2. Graph Theory - Arumugam and Isaac, SciTech Publication.

Course Outcomes: The learners would have learned to:

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the basic principles of sets and operation in sets.	1,5	Understanding
CO-2	Understand the concept of relations and their types.	1,2,5	Understanding
CO-3	Apply logical reasoning to solve a variety of problems.	1,2,5	Applying
CO-4	Apply the concept of vectors and matrices to solve the problem.	1,5	Applying
CO-5	Analyze the various types of graphs and apply them in problem-solving.	1,5	Analyzing

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credit						
I	21UCCS12	Discrete Mathematics	60	4						
Course Outcomes (COS)	Programme Learning Outcomes (PLOs)					Programme Specific Outcomes (PSOs)				
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	✓			✓	✓	✓				✓
CO-2	✓	✓	✓	✓	✓	✓				✓
CO-3	✓	✓	✓	✓	✓	✓				✓
CO-4	✓			✓	✓	✓				✓
CO-5	✓			✓	✓	✓				✓
Number of matches (✓) = 29 Relationship = Low/ Medium /High										

Prepared by
Name and Signature
M. Yogasini

Checked by
Head of the Department

Semester – I

Course Title	C Programming Practical
Total Hrs	30
Hrs/Week	2
Sub.Code	21UCCS1P1
Course Type	CP I
Credits	1
Marks	50

General Objective:

To develop the ability to frame the programs and enrich sufficient knowledge in creating software.

Course Objectives: The learners will be able to:

CO	Course Objectives
CO-1	Understand the concept of library functions.
CO-2	Explain the concept of loops.
CO-3	Compute arrays in Matrix Multiplication and Addition.
CO-4	Develop programs on strings for effective use of memory allocation.
CO-5	Test a user-defined function with a predefined one.

C - PROGRAMMING (PRACTICAL)

1. Program using Library Functions (minimum five functions)
2. Program using nested if-else and/or else-if ladder
3. Program using 'switch' and/or conditional operator
4. Program using for-loop
5. Program using while loop
6. Program using do-loop
7. Program using nested loops
8. Program dealing One-dimensional Array
9. Program using Two-dimensional Array
10. Program using user-defined Functions
11. Program using Recursive Function
12. Program implementing structure
13. Program implementing union
14. Program using string methods

Course Outcomes: The learners would have learned to:

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the various mathematical functions.	1,5	Understanding
CO-2	Apply their knowledge to develop programs based on loops.	1,5	Applying
CO-3	Apply the concept of Arrays in Matrix Addition and Matrix Multiplication.	1,5	Applying
CO-4	Analyze programs using String Methods in an attempt to create one.	1,5	Analyzing
CO-5	Assess User Defined Functions to make use of it effectively.	1,5	Evaluating

Relationship Matrix

Semester	Course Code	Title of the Course					Hours	Credit		
I	21UCCS1P1	C Programming Practical					30	1		
Course Outcomes (COS)	Programme Learning Outcomes (PLOs)					Programme Specific Outcomes (PSOs)				
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	✓			✓	✓	✓				✓
CO-2	✓			✓	✓	✓				✓
CO-3	✓			✓	✓	✓				✓
CO-4	✓			✓	✓	✓				✓
CO-5	✓			✓	✓	✓				✓
Number of matches (✓) = 25 Relationship = Low/ Medium /High										

Prepared by
Mrs. S. Fathima Suhara
Name and Signature

Checked by
Head of the Department

Semester – I

Course Title	OFFICE AUTOMATION
Total Hrs	60
Hrs/Week	4
Sub.Code	21UACS11
Course Type	A-I/1
Credits	3
Marks	100

General Objective:

To learn the backbone of office automation, which allows users to transfer data, mail, and even voice across the network, including dictation, typing, filing, copying, fax, Telex, and microfilm.

Course Objectives: The learners will be able to:

CO	Course Objectives
CO-1	Understand the concept of manipulation of relay office information needed for accomplishing basic tasks.
CO-2	Explain the concept of mail merge.
CO-3	Apply their knowledge in business productivity and optimize existing office procedures to save time.
CO-4	Practice spreadsheet documents, files, and images.
CO-5	Test their skills in enhancing PowerPoint slides with animation and sound effects.

UNIT I Documentation Using MS-Word:

Introduction to Office Automation, Creating & Editing Document, Formatting Document, AutoText, Autocorrect, Spelling and Grammar Tool, Page Formatting, Bookmark.

UNIT II Advance MS-Word:

Advance Features of MS-Word [Mail Merge, Macros], Tables, File Management, Printing, Styles, Linking and Embedding Object.

UNIT III Electronic Spread Sheet using MS-Excel:

Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts.

UNIT IV Advance features of MS- Excel:

Creating Pivot table, Pivot Chart, Data Sorting, Filtering data in worksheet, Validation, Goal Seek and Scenario in Excel.

UNIT V Presentation Using MS-PowerPoint:

Presentations, Creating Slides, Manipulating & Enhancing Slides, Word Art, Custom Animation, Inserting Recorded Sound Effect or In-Built Sound Effect.

TEXT BOOK:

Microsoft Office – Complete Reference – BPB Publication

REFERENCE BOOK:

Learn Microsoft Office – Russell A. Stultz – BPB Publication.

Course Outcomes:

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the concept of manipulation of relay office information.	1,2	Understanding
CO-2	Illustrate the concept of mail merge.	2,3,5	Understanding
CO-3	Interpret business productivity to optimize existing office procedures.	2,3,5	Applying
CO-4	Prepare spreadsheet documents, files, and images.	1,2,3,5	Applying
CO-5	Assess their skills in preparing PowerPoint slides with multimedia effects.	1,3,5	Evaluating

Relationship Matrix

Semester	Course Code	Title of the Course					Hours	Credit				
I	21UACS11	OFFICE AUTOMATION					60	3				
Course Outcomes (COS)	Programme Learning Outcomes (PLOs)					Programme Specific Outcomes (PSOs)						
	PLO 1	PL O 2	PL O 3	PL O 4	PL O 5	PSO 1	PSO 2	PS O 3	PSO 4	PSO 5		
CO-1	✓	✓		✓	✓	✓	✓					
CO-2	✓	✓	✓	✓	✓		✓	✓		✓		
CO-3	✓	✓	✓	✓	✓		✓	✓		✓		
CO-4	✓	✓	✓	✓	✓	✓	✓	✓		✓		
CO-5	✓	✓	✓	✓	✓	✓		✓		✓		
Number of matches (✓) = 39 Relationship = Low/Mediam/ High												

Prepared by
V. Uma Devi
Name and Signature

Checked by
Dr. A. Shakul Hamid
Head of the Department

Semester – I

Course Title	OFFICE AUTOMATION PRACTICAL
Total Hrs	30
Hrs/Week	2
Sub.Code	21UACS1P1
Course Type	A-I/1P
Credits	1
Marks	100

General Objective:

To experiment with office automation to transfer data, mail, and voice across the network.

Course Objectives: The learners will be able to:

CO	Course Objectives
CO-1	Define manipulation of relay office information to accomplish basic tasks.
CO-2	Discuss the idea behind mail merge.
CO-3	Generalize business productivity to optimize existing office procedures.
CO-4	Modify spreadsheet documents, files, and images.
CO-5	Experiment with PowerPoint slides with animation and sound effects.

MS WORD 2000

1. Typing letters, Editing, and Printing.
2. Using Spell Check and Thesaurus.
3. Designing a Cover Page with Word Art.
4. Using Header, Footer, Bookmark, End notes, and Foot notes.
5. Mail merge a letter to an address file.
6. Typing Mathematical equations and symbols.
7. Create a table.

POWER POINT 2000

1. Creation of presentations with different styles on a given topic of current interest.
2. Preparing Presentation for a topic in the study of all courses.

EXCEL 2000

1. Entering spread sheets with formula
2. Entering spreadsheet and doing Statistical Calculations
3. Printing of Graphs and charts for the given data.
4. Creating and using Macros.
5. Create a list of data using Sorting
6. Create a list of data using the Validation option
7. Create a spreadsheet with the concept of Goal Seek and Scenario.

Course Outcomes: The learners would have learned to:

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the concept of manipulation of relay office information needed for accomplishing basic tasks.	1,2	Understanding
CO-2	Apply the concept of mail merge.	2,3,5	Applying
CO-3	Employ business productivity and optimize existing office procedures.	2,3,5	Applying
CO-4	Select spreadsheet documents, files, and images to create and edit.	1,2,3,5	Analyzing
CO-5	Choose PowerPoint slides with animation and sound effects for the validation and seeking goals.	1,3,5	Evaluating

Relationship Matrix

Semester	Course Code	Title of the Course					Hours	Credit				
I	21UACS1P1	OFFICE AUTOMATION PRACTICAL					30	1				
Course Outcomes (COS)	Programme Learning Outcomes (PLOs)					Programme Specific Outcomes (PSOs)						
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5		
CO-1	✓	✓		✓	✓	✓	✓					
CO-2	✓	✓	✓	✓	✓		✓	✓		✓		
CO-3	✓	✓	✓	✓	✓		✓	✓		✓		
CO-4	✓	✓	✓	✓	✓	✓	✓	✓		✓		
CO-5	✓	✓	✓	✓	✓	✓		✓		✓		
Number of matches (✓) = 39 Relationship = Low/Medium/ High												

Prepared by
V. Uma Devi
Name and Signature

Checked by
Dr. A. Shakul Hamid
Head of the Department