



SRI VIDYA MANDIR ARTS & SCIENCE COLLEGE

(Autonomous)

[An Autonomous College Affiliated to Periyar University, Salem, Tamil Nadu]

[Accredited by NAAC with 'A' Grade with CGPA of 3.27]

[Recognized 2(f) & 12(B) Status under UGC Act of 1956]

Katteri – 636 902, Uthangarai (Tk), Krishnagiri (Dt)

Tamil Nadu, India

Website: www.svmcugi.com

E-mail: svm.computerscience@gmail.com



DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

CHOICE BASED CREDIT SYSTEM (CBCS)

REGULATIONS AND SYLLABUS FOR BSC COMPUTER SCIENCE PROGRAMME (SEMESTER PATTERN)

(For Students Admitted in the College from the Academic Year 2020-2021 Onwards)



Programme Outcomes (POs)

PO1	Understand fundamental concepts of key areas in Computer Science and enable students expose technical, analytical and creative skills.
PO2	Build student's effective communication, ethical attitudes, team work and logical proficiency.
PO3	Students are to be passionately engaged in primary learning with intend to think differently, understanding and applying knowledge of mathematical, algorithmic and computing skills to acquire employability.
PO4	Students are to be imparted with a broad conceptual background in the Computing sciences to design, implement and evaluate a computational system.
PO5	Make use of modern tools and techniques to develop practical skills for fulfilling the needs of industry and society.

Programme Specific Outcomes (PSOs)

PSO1	Possess basic knowledge on core concepts of Computer Science the knowledge of Computer Science through theory and practicals.
PSO2	Demonstrate mastery of Computer Science in the following core knowledge areas <ul style="list-style-type: none"> • Data Structures and Programming Languages • Databases, Software Engineering and Web Development • Operating System and Computer Hardware
PSO3	Apply problem-solving skills and the knowledge of programming languages in computer science to solve real world problems.
PSO4	Empowered with analytical mind and critical thinking.
PSO5	Develop practical skills to fulfill the needs of industry and society



SRI VIDYA MANDIR ARTS & SCIENCE COLLEGE

(Autonomous)

Bachelor of Science (B.Sc.) in Computer Science

Programme Pattern and Syllabus (CBCS)

(For Students Admitted in the College from the Academic Year 2020-2021 Onwards)

Sl. No.	Part	Nature of Course	Course Code	Name of the Course	Hours/Week	Credits	Marks		
							CIA	ESE	Total
SEMESTER I									
1	I	Language	20UTA1F01	Tamil – I	5	3	25	75	100
2	II	English	20UEN1F01	English – I	5	3	25	75	100
3	III	Core – I	20UCS1C01	Programming in Python	5	3	25	75	100
4		Core – II	20UCS1C02	Digital Computer Fundamentals	5	3	25	75	100
5		Core Practical – I	20UCS1P01	Programming in Python Lab	3	2	40	60	100
6		Allied – I	20UMA1A01	Mathematics – I	5	3	25	75	100
7	IV	Value Education	20UVE101	Yoga	2	2	25	75	100
Total					30	19	190	510	700
SEMESTER II									
8	I	Language	20UTA2F02	Tamil – II	5	3	25	75	100
9	II	English	20UEN2F02	English – II	5	3	25	75	100
10	III	Core – III	20UCS2C03	Programming in C	5	3	25	75	100
11		Core – IV	20UCS2C04	Data Structures & Algorithms	4	3	25	75	100
12		Core Practical – II	20UCS2P02	Data Structure using C Lab	3	3	40	60	100
13		Allied – II	20UMA2A02	Mathematics – II	4	3	25	75	100
14	IV	SBEC – I	20UCS2S01	Office Automation Lab	2	2	40	60	100
15		Common Course	20UES201	Environmental Studies	2	2	25	75	100
Total					30	22	230	570	800
SEMESTER III									
16	I	Language	20UTA3F03	Tamil – III	5	3	25	75	100



17	II	English	20UEN3F03	English – III	5	3	25	75	100
18	III	Core – V	20UCS3C05	Programming in C++	5	3	25	75	100
19		Core – VI	20UCS3C06	Operating Systems	5	3	25	75	100
20		Core Practical – III	20UCS3P03	Programming in C++ Lab	3	3	40	60	100
21		Allied – I	20UCM3A01	Principles of Accountancy	5	3	25	75	100
22	IV	NMEC – I		Non Major Elective Course – I	2	2	25	75	100
Total					30	20	190	510	700
SEMESTER IV									
23	I	Language	20UFTA04	Tamil – IV	5	3	25	75	100
24	II	English	20UFEN04	English – IV	5	3	25	75	100
25	III	Core – VII	20UCS4C07	Web Technology	4	3	25	75	100
26		Core – VIII	20UCS4C08	Software Engineering	4	3	25	75	100
27		Core Practical – IV	20UCS4P04	Web Technology Lab	2	3	40	60	100
28		Allied – II	20UCM4A02	Cost and Management Accounting	4	3	25	75	100
29		Allied – II Practical	20UCM4AP01	Allied Commerce Practical	2	2	40	60	100
30	IV	SBEC – II	20UCS4S02	Quantitative Aptitude – I	2	2	40	60	100
31		NMEC – II		Non Major Elective Course – II	2	2	25	75	100
Total					30	24	270	630	900
SEMESTER V									
32	III	Core – IX	20UCS5C09	Relational Database Management System	6	4	25	75	100
33		Core – X	20UCS5C10	.Net Programming	6	4	25	75	100
34		Core – XI	20UCS5C11	Computer Networks	6	4	25	75	100
35		Core Practical – V	20UCS5P05	.Net Programming Lab	3	4	40	60	100
36		Elective – I		Elective – I	6	4	25	75	100
37	IV	SBEC – III	20UCS5S03	Mobile App Development Lab	3	2	40	60	100



Total					30	22	180	420	600
SEMESTER VI									
38	III	Core – XII	20UCS6C12	PHP With MySQL	5	4	25	75	100
39		Core – XIII	20UCS6C13	Computer Graphics	5	4	25	75	100
40		Core – XIV	20UCS6C14	Java programming	5	4	25	75	100
41		Core Practical – VI	20UCS6P06	PHP With MySQL Lab	3	4	40	60	100
42		Core Practical – VII	20UCS6P07	Java Programming Lab	3	4	40	60	100
43		Elective – II	–	Elective – II	5	4	25	75	100
44		Project	20UCS6PR1	.Net/PHP/Android	2	6	40	60	100
45	IV	SBEC – IV	20UCS6S04	Quantitative Aptitude – II	2	2	40	60	100
46	V		20UCS6EX01	Extension Activities	-	1	-	-	-
Total					30	33	260	540	800
Grand Total					180	140	1320	3180	4500

Note

CBCS – Choice Based Credit system

CIA – Continuous Internal Assessment

ESE – End of Semester Examinations

**Elective Courses****Elective – I**

Semester	Part	Course Code	Paper	Course Title
V	III	20UCS5E01	I	Mobile Computing
		20UCS5E02	II	Software Testing
		20UCS5E03	III	E-Commerce Technologies

Elective – II

Semester	Part	Course Code	Paper	Course Title
VI	III	20UCS6E04	I	Data Mining
		20UCS6E05	II	Cyber Safety
		20UCS6E06	III	Network Security

SBEC – Skill Based Elective Courses*

Part	Semester	Title of the Paper	Hours		Credit	Maximum Marks		
			Lecture	Lab		CIA	ESE	Total
IV	II	Office Automation 20UCS2S01	-	2	2	40	60	100
	IV	Quantitative Aptitude – I 20UCS4S02	-	2	2	25	75	100
	V	Mobile App Development 20UCS5S03	-	2	2	40	60	100
	VI	Quantitative Aptitude – II 20UCS6S04	-	2	2	25	75	100



Non Major Elective Course – (NMEC)

Extra Disciplinary Subjects offered by the Department of Computer Science. The department can offer any one of the subjects to the other major subject students in each semester.

NMEC – Non-Major Elective Courses							
Part	Semester	Title of the Paper	Hours	Credit	Maximum Marks		
			Lect.		CIA	ESE	Total
IV	III	NMEC I: Basics of Computers 20UCS3N01	2	2	25	75	100
		NMEC I: System Administration and Maintenance - 20UCS3N02	2	2	25	75	100
	IV	NMEC II: Office Automation 20UCS4N03	2	2	25	75	100
		NMEC II: Basics of Internet 20UCS4N04	2	2	25	75	100

List of Extension Activities

1. National Cade Corps (NCC)
2. National Service Scheme (NSS)
3. Youth Red Cross (YRC)
4. Physical Education (PYE)
5. Eco Club (ECC)
6. Red Ribbon Club (RRC)
7. Women Empowerment Cell (WEC)



PROGRAMME SYLLABUS



Program: B.Sc. Computer Science				
Core – I		Course Code: 20UCS1C01		Course Title: Programming in Python
Semester I	Hours/Week 5	Total Hours 75	Credits 3	Total Marks 100

Course Objectives

1. To understand the nature of python programming.
2. To describe the core syntax and semantics of python programming language.
3. To infer the object-oriented programming concepts in python.
4. To understand why Python is a useful scripting language for developers.
5. To get practical knowledge of a popular programming language Python.

UNIT – I

Instant Hacking: The Basics: Numbers and Expressions – Variables – Statements – Getting Input from the User – Functions – Modules – Saving and Executing Your Programs – Strings.

UNIT – II

Lists and Tuples: Common Sequence Operations – Lists: Python’s Workhorse – Tuples: Immutable Sequences. Working with Strings: String Formatting: The Long Version – String Methods.

UNIT – III

Conditionals, Loops, and Some Other Statements: More About Print and Import – Assignment Magic – Conditions and Conditional Statements – Loops.

UNIT – IV

Dictionaries: When Indices Won’t Do: Dictionary Uses – Creating and using Dictionaries. Abstraction: Creating Your Own Functions – The Magic of Parameters: Keyword Parameters and Defaults – Scoping – Recursion. More Abstraction: The Magic of Objects – Classes and Types.

**UNIT – V**

Files and Stuff: Opening Files – The Basic File Methods. Database Support: The Python Database API – SQLite and PySQLite.

Text Book

1. Magnus Lie Hetland, “Beginning Python- From Novice to Professional”, Apress Publishers, 2009, ISBN: 978-81-8489-092-1.

Reference Books

1. Dr. R. Nageswara Rao, “Core Python Programming”, Dreamtech Press, Wiley Publication, Second edition, 2017, ISBN: 9789386052308
2. Mark Lutz, “Learning Python”, O’ Reilly, 2007, ISBN: 978-0-596-15806-4.
3. David Beazley and Brain K Jones, “Python Cookbook”, O, Reilly, Third edition, 2013. ISBN: 978- 1449340377.

Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand and explain Python Programming.	K1 & K2
CO2	Interpret the fundamental Python syntax and semantics.	K2 & K3
CO3	Understand the concept of scripting and the contributions of scripting languages.	K3
CO4	Articulate the Object-Oriented Programming concepts used in python.	K3
CO5	Connect a Python program with a database.	K3 & K4

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create



Mapping of COs with POs

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	M
CO2	S	M	S	S	M
CO3	S	S	S	S	M
CO4	S	M	S	M	S
CO5	S	S	S	S	S

S – Strong

M – Medium

L – Low



Program: B.Sc. Computer Science				
Core – II		Course Code: 20UCS1C02		Course Title: Digital Computer Fundamentals
Semester	Hours/Week	Total Hours	Credits	Total Marks
I	5	75	3	100

Course Objectives

1. Understand and describe the basics of various digital components.
2. Understand binary, hexadecimal and octal number systems and their arithmetic.
3. Understand how logic circuits and Boolean algebra forms as the basics of digital computer
4. Identify and illustrate basic organization of computer.
5. Knowledge in memory elements like RAM, ROM and Magnetic disk.

UNIT – I

Number Systems and Codes: Binary Number System – Binary-to-Decimal Conversion – Decimal-to-Binary Conversion – Octal Numbers – Hexadecimal Numbers – The ASCII Code – The Excess-3 Code – The Gray Code.

UNIT – II

Digital Logic: The Basic Gates – NOT, OR, AND – Universal Logic Gates – NOR, NAND – AND-OR-Invert Gates. Combinational Logic Circuits: Boolean Laws and Theorems – Sum-of-Products Method – Truth Table to Karnaugh Map – Pairs, Quads, and Octets – Karnaugh Simplification – Don't-care Conditions – Product-of-Sums Simplification.

UNIT – III

Data-Processing Circuits: 16-to-1 Multiplexer – 1-to-16 De-Multiplexer – BCD-to-Decimal Decoder – Decimal-to-BCD Encoder – Exclusive-OR Gates. Arithmetic Circuits: Binary Addition – Binary Subtraction – Unsigned Binary Numbers – Sign-magnitude Numbers – 2'S Complement Representation – 2'S Compliment Arithmetic.

**UNIT – IV**

Arithmetic Circuits: Arithmetic Building Blocks – The Adder – Subtractor. Flip-Flops: RS Flip-flops – Edge-Triggered D Flip-flops – Edge Triggered JK Flip-flops – JK Master-slave Flip-flops.

UNIT – V

Registers: Serial-In Serial-Out – Serial-In Parallel-Out – Parallel-In Serial-Out – Parallel-In Parallel-Out (54/74174). Memory: Introduction – Magnetic Memory – Optical Memory.

Text Book

1. Donald P Leach, Albert Paul Malvino and Goutam Saha, “Digital Principles and Applications,” 8th Edition, TMH, 2006.

Reference Books

1. Morris Mano, “Digital Logic and Computer Design”, 4th Edition, Pearson, 2008.
2. Thomas C Bartee, “Digital Computer Fundamentals”, Sixth Edition, Tata McGraw-Hill, 1985.

Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Describe various number system and codes.	K1 & K2
CO2	Apply Boolean laws and rules to simplify simple expressions.	K2 & K3
CO3	Experiment combinational and sequential circuits.	K4 & K5
CO4	Identify and illustrate basic organization of computer.	K3
CO5	Illustrate the memory concepts, I/O devices and peripherals.	K3 & K4

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create



Mapping of COs with POs

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	M	M	M	S	M
CO2	M	M	S	S	M
CO3	S	S	S	S	M
CO4	S	M	S	M	S
CO5	S	S	M	S	M

S – Strong

M – Medium

L – Low



Program: B.Sc. Computer Science				
Core Practical – I		Course Code: 20UCS1P01		Course Title: Programming in Python Lab
Semester I	Hours/Week 3	Total Hours 45	Credits 2	Total Marks 100

Course Objectives

1. To train the students for the basics of coding and executing Python scripts.
2. To understand the various data structures available in Python programming language and apply them in solving computational problems.
3. To get practical knowledge of a popular programming language Python.

List of Practicals

1. Program to swap two numbers without taking a temporary variable.
2. Implement python script to read person's age from keyboard and display whether he is eligible for voting or not.
3. Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero.
4. To display elements of tuples in reverse order.
5. Program to add two matrices using lists.
6. Count words in a String using Dictionary.
7. Implement Python Script to check given string is palindrome or not.
8. Define a function max_of_three() that takes three numbers as arguments and returns the largest of them. Implement Python script to print factorial of a number using Recursion.
9. Find the area and perimeter of the circle using class and objects
10. Write Python script to copy file contents from one file to another.
11. Write a python program to perform various database operations (create, insert, delete, update).



Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn to design and implement efficient programs using python.	K1 & K2
CO2	Improve Programming Skill in Python.	K3 & K4
CO3	Learn working with the new data types in python.	K4, K5 & K6
CO4	Possesses knowledge to implement in Python.	K4
CO5	Connect a Python program with a database.	K5 & K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	M	M
CO2	M	M	S	S	M
CO3	S	S	S	S	M
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S – Strong

M – Medium

L – Low



Program: B.Sc. Computer Science				
Core – III		Course Code: 20UCS2C03		Course Title: Programming in C
Semester II	Hours/Week 5	Total Hours 75	Credits 3	Total Marks 100

Course Objectives

1. Learn the basic structure of C Programming.
2. To understand the nature of C programming.
3. To describe the core syntax and semantics of C programming language.
4. To help students to get the practical knowledge of a programming language.
5. Understand the decision making and branching statement in C.

UNIT – I

Overview of C: History of C – Importance of C – Basic Structure of C Programs. Constants, Variables and Data types: Character Set – C Tokens – Keywords and Identifiers – Constants – Variables – Data types – Declaration of Variables – Declaration of Storage Classes – Assigning Values to Variables – Defining Symbolic Constants. Operators and Expression: Types of Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity. Managing Input and Output Operations: Reading and Writing a Character – Formatted Input and Output.

UNIT – II

Decision Making and Branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch Statements – GOTO Statements. Decision Making and Looping: WHILE Statement – DO Statement – FOR Statement – Jumps in Loops. Arrays: Definition & Declaration – One Dimensional – Two Dimensional – Multi Dimensional Arrays – Dynamic Arrays.

UNIT – III

Character Arrays and Strings: Introduction – Declaring and Initializing String Variables – Reading Strings from Terminal – Writing Strings to Screen – String Handling Functions – Table of Strings. User – Defined Functions: Introduction – Need for User – Defined Function



– A Multi-Function Program – Elements of User-Defined Function – Definition of Functions – Return Values and their Types – Function Calls – Function Declaration – All Category of Functions – Nesting of Functions – Recursion – Passing Arrays to Functions – Passing Strings to Function.

UNIT – IV

Structures and Unions: Introduction – Defining a Structure – Declaring Structure Variables – Accessing Structure Members – Structure Initialization – Copying and Comparing Structure Variables – Arrays of Structures – Arrays within Structures – Structures within Structures – Structures and Functions – Unions – Size of Structures – Bit Fields. Pointers: Introduction – Understanding Pointers – Accessing the Address of a Variable – Initializing of Pointer Variables. Chain of Pointers – Pointer Expressions – Pointers and Arrays – Pointers and Character Strings – Arrays of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – Pointer and Structures.

UNIT – V

File Management: Introduction – Defining and Opening a File – Closing a File – Input/Output Operation on Files – Error Handling During I/O Operations – Random Access Files – Command Line Arguments.

Text Book

1. E. Balgurusamy, “Programming in ANSI C”, 5th Edition, Tata McGraw Hill, New Delhi, 2010.

Reference Books

1. Herbert Schildt, “C: The complete Reference”, 4th Edition, Tata Mc Graw Hill, 2003.
2. B.L. Juneja, “Programming in C”, 1st Edition, Cengage Learning, 2012.



Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and understand the concept of C.	K1 & K2
CO2	Apply the concept of Array, Function, String and Pointers.	K3
CO3	Analyze the concept of branching and looping statements.	K4
CO4	Develop solutions to problems using C programming.	K4 & K5
CO5	Ability to build C programming to solve real world problems.	K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	M	M
CO2	S	M	S	S	M
CO3	S	M	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S – Strong

M – Medium

L – Low



Program: B.Sc. Computer Science				
Core – IV		Course Code: 20UCS2C04		Course Title: Data Structures and Algorithms
Semester II	Hours/Week 4	Total Hours 60	Credits 3	Total Marks 100

Course Objectives

1. To have fundamental knowledge about data and the way it is stored.
2. To educate the concepts of fundamentals of writing algorithms and approach in problem solving.
3. To understand the concepts like stacks, queues, lists and its structures.
4. Knowing the concepts of Trees, Tree Traversals and Graphs
5. Develop some applications using data structures.

UNIT – I

Algorithms (Analysis and design): Problem Solving – Top-Down and Bottom-Up Approaches to Algorithm Design – Use of Algorithms in Problem Solving – Design, Implementation, Verification of Algorithm – Efficiency Analysis of Algorithms: Space, Time Complexity, and Frequency Count – Sample Algorithms: Exchange the Value of Two Variables – Summation of Set of Numbers – Decimal to Binary Conversion – Sorting – Factorial – Fibonacci – Finding a Largest Number in an Array – Reverse the Order of Elements in Array.

UNIT – II

Introduction: Definitions – Concepts – Overview – Implementation of Data Structures. Arrays: Definition – Terminology – One Dimensional Array – Multi Dimensional Array. Stacks: Introduction – Definition – Representation of Stacks – Operations on Stacks – Applications of Stack: Evaluation of Arithmetic Expression – Implementation of Recursion – Factorial Calculation.

UNIT – III

Queues: Introduction – Definition – Representation of Queues – Various Queue Structures: Circular Queue – De-queue – Priority Queue – Applications of Queues: CPU Scheduling.



Linked List: Definition – Single Linked List – Double Linked List – Circular Double Linked List – Applications: Sparse Matrix – Polynomial.

UNIT – IV

Trees: Terminologies – Definitions & Concepts – Representation of Binary Tree – Operations on Binary Tree – Types of Binary Trees: Expression Tree – Binary Search Tree – Heap Tree – Red Black Tree.

Graphs: Introduction – Graph terminologies – Representation of Graphs – Operations on Graphs – Applications of Graph: Shortest Path Problem – Minimum Spanning Tree: Kruskal and Prims Algorithm.

UNIT – V

Searching: Terminologies – Linear Search Techniques with – Array, Linked List, and Ordered List – Binary Search – Non Linear Search- Binary Tree Searching – Binary Search Tree Searching. Sorting: Terminologies – Sorting Techniques – Insertion Sort – Selection sort – Bubble sort – Quick sort – Merge sort.

Text Books

1. Sathish Jain, Shashi Singh, “Data Structure Made Simple”, 1st Edition, BPB Publications, New Delhi, 2006.
2. Debasis Samanta, “Classic Data Structures”, 2nd Edition, PHI Learning, New Delhi, 2009.

Reference Books

1. Aprita Gopal, “Magnifying Data Structures”, 1st Edition, PHI Learning, New Delhi, 2010.
2. Chitra A & Rajan PT, “Data Structures”, 2nd Edition, Vijay Nicole Publications, 2016.
3. Ellis Horowitz and Sartaj Sahni, “Fundamentals of Data Structure”, Galgotia Publications, New Delhi, 1985.
4. Ellis Horowitz and Sartaj Sahni, “Fundamentals of Computer Algorithms”, Galgotia Publications, New Delhi, 1985.



Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the representations of data and various algorithms.	K1 & K2
CO2	Analyze the complexity of different algorithms.	K3 & K4
CO3	Remember the concept of algorithms for searching, sorting and dynamic programming.	K1, K2 & K3
CO4	Adapting the algorithmic concepts and implement new ones.	K4 & K5
CO5	Apply appropriate algorithms and data structure for real time.	K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	M
CO2	S	S	M	S	M
CO3	S	M	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S – Strong

M – Medium

L – Low



Program: B.Sc. Computer Science				
Core Practical – II		Course Code: 20UCS2P02		Course Title: Data Structure using C Lab
Semester II	Hours/Week 3	Total Hours 45	Credits 3	Total Marks 100

Course Objectives

1. To impart adequate knowledge on the need of programming languages and problem solving techniques.
2. To develop an in-depth understanding of functional and logical concepts of C Programming.
3. To understand the various data structures and apply them in solving computational problems
4. To get practical knowledge of a popular programming language C.

List of Practicals

1. Implement Push and Pop Operations of a Stack using Array.
2. Write a program to perform factorial calculation using recursion.
3. Implement Add and Delete Operations on Queue using Pointer.
4. Implement Add and Delete Operations on Circular Queue.
5. Write a Program to convert an Infix Expression to Postfix Expression using Arrays.
6. Write a Program to add Two Polynomials using Pointers.
7. Perform Tree Traversals for a Binary Tree using Recursion.
8. Write a program to perform Binary Search.
9. Sort the given list of numbers using Heap Sort.
10. Sort the given list of numbers using Quick Sort.



Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Improve an ability to develop programs in C.	K1 & K2
CO2	Learn to implement various data structures using arrays and pointers in C language.	K3 & K4
CO3	Evaluating infix and postfix expressions by using C.	K5
CO4	Possess knowledge to solve polynomial problems in C language.	K3, K4 & K5
CO5	Enable to implement searching and sorting problems in C.	K3, K4 & K5

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	M	M	S	S	M
CO3	S	S	S	S	M
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S – Strong

M – Medium

L – Low



Program: B.Sc. Computer Science				
SBEC – I		Course Code: 20UCS2S01		Course Title: Office Automation Lab
Semester II	Hours/Week 2	Total Hours 30	Credits 2	Total Marks 100

Course Objectives

1. Give students an in-depth understanding of why MS Office package.
2. Provide hands-on use of Microsoft Office applications Word, Excel and PowerPoint.
3. Create a new document and format a document, prepare how to create bio-data, create how to insert a table in document and create mailing labels using mail merge.
4. Create a database in Excel and sort the data, prepare mark list for a student, Pay bill preparation, Invoice report and generate a graph for the given data.
5. Create presentation in PowerPoint for a seminar, prepare organization charts, and prepare charts to display percentage of marks in each semester for all students.

MS-Word

1. Text Manipulation: Write a paragraph about your institution and Change the font size and type, Spell check, Aligning and justification of Text.
2. Find and Replace: Write a paragraph about yourself and do the following.
Find and Replace - Use Numbering Bullets, Footer and Headers.
3. Tables and manipulation: Creation, Insertion, Deletion (Columns and Rows).
Create a mark sheet.
4. Mail Merge: Prepare an invitation to invite your friends to your birthday party. Prepare at least five letters.

MS-Excel

1. Mark list preparation for a student using Data sorting-Ascending and Descending (both numbers and alphabets).
2. Individual Payroll preparation.
3. Invoice Report preparation.
4. Drawing Charts. Take your own table.

**MS-Powerpoint**

1. Create a slide show presentation for a seminar using Tables and Organization Charts.
2. Create a slide show presentation to display percentage of marks in each semester for all students.
 - a) Use bar chart (X-axis: Semester, Y-axis: % marks).
 - b) Use different presentation template different transition effect for each slide.

MS-Access

1. Creating Table using different methods.
2. Generating reports.

Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Create a document for various purposes, edit and format the document according to the need.	K3
CO2	Gain knowledge to create spreadsheets and use features like formulas and charts creation, fill series, sorting and filtering.	K3
CO3	Prepare PowerPoint presentation for their seminar including slide show, effects, graphs, etc.	K4
CO4	Enable the students to create database and handle the query.	K5 & K6
CO5	Learn to generate reports using MS ACCESS.	K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create



Mapping of COs with POs

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	M	L
CO2	S	S	S	L	L
CO3	S	S	S	M	M
CO4	S	S	S	M	S
CO5	S	M	S	M	M

S – Strong

M – Medium

L – Low