



MOHAMED SATHAK HAMID COLLEGE OF ARTS AND SCIENCE FOR WOMEN
(Promoted By Mohamed Sathak Trust, Chennai & Affiliated to Alagappa University, Karaikudi)
Pokkavarathu Nagar, Rameswaram Main Road, Vani Post, Sakkarakottai (Panchayat)
Ramanathapuram – 623 536.



ALAGAPPA UNIVERSITY, KARAİKUDI
SYLLABUS UNDER CBCS PATTERN FOR AFFILIATED COLLEGES WITH
EFFECT FROM THE ACADEMIC YEAR 2022-23 ONWARDS

B. C. A.
Programme Structure

Sem.	Part	Course Code	T/OL/E/AL/SEC	Title of the Paper	T/P	Credit	Hours/Week	Max. Marks		
								Int.	Ext.	Total
I	I	2211T	T/OL	Tamil /Other Languages -I	T	3	6	25	75	100
	II	712CE	E	Communicative English - I	T	3	6	25	75	100
	III	22BCA1C1	CC	Data Structure & C Programming	T	5	5	25	75	100
		22BCA1P1	CC	Data Structure & C Programming Lab	P	4	4	40	60	100
		-	AL – IA	B.Sc.IT/B.Sc.,CS/ B.Sc.Mathematics/ B.Sc.Physics	T	3	3	25	75	100
		-	AL - IA	Practical-Respective Allied Theory Course	P	2	2	40	60	100
	IV	22BVE1	SEC-I	Value Education	T	2	2	25	75	100
				Library		--	2	--	--	--
	Total						22	30	205	495

Sem.	Part	Course Code	Title of the Paper	Credit	Hours/Week	Max. Marks		
						Int.	Ext.	Total
I	III	71BEPP	Professional English for / Physical Sciences -I	4	5	25	75	100

- T/OL-T/Other Language,
 - E – English
 - CC-Core course –Core competency, critical thinking, analytical reasoning, research skill & team work
 - AL - Allied / GEC -Exposure beyond the discipline
 - AECC - Ability Enhancement Compulsory Course (Professional English & Environmental Studies) - Additional academic knowledge, psychology and problem solving etc.,
 - SEC-Skill Enhancement Course - Exposure beyond the discipline (Value Education, Entrepreneurship Course, Computer application for Science, etc.,
- * T- Theory, P-Practical

As per TANSCHÉ, the Professional English book will be taught to all four streams apart from the existing hours of teaching/additional hours of teaching (1hour/day) as a 4 credit paper as an add on course on par with Major paper and completion of the paper is a must to continue his/her studies further.

Semester - I					
Course Code: 22BCA1C1	Core course- I		T/P	Credits	H/W
	Data Structures & C Programming		T	5	5
Objectives	<ul style="list-style-type: none"> ➤ To understand and develop well-structured programs using C language. ➤ To learn the basic data structures implementing through C language. ➤ To deal with different memory allocation & input/output methods. ➤ Problem solving through computer programming using C Language. 				
Unit - I	Data Structure:- Classification of Data Structures, Data Structure Operations, Abstract Data Type. Stack:- definition, Stack as ADT. Queue:- Definition, Queue as ADT. Linked List:- Insertion into Linked List, Deletion into Linked List. Trees:- Basic Terminology.				
Unit - II	Overview of C:- History of C, Importance of C, Sample C Programs, Structure of a C Programs, Constants, Variables and Data Types, Operators and Expressions, Input and Output Operations.				
Unit - III	Decision Making – Branching – Looping - Arrays:- One and Two Dimensional Arrays. Character Strings:- Declaring and Initializing String Variables, Reading Strings From Terminal, Writing Strings to Screen, Arithmetic Operations on Characters, String Handling Functions.				
Unit - IV	User Defined Functions:- Introduction, Need for User Defined Functions, The Form of C Functions, Return values and their types, Calling a Function, Categories of Functions, Nesting of Functions, Recursion, Functions With Arrays, The Scope and Lifetime of Variables. Structures and Unions:- Structure Definition, Giving Values to Members, Structure Initialization, Arrays of Structures, Arrays Within Structures, Structures Within Structures, Structures And Functions, Unions.				
Unit - V	Pointers:- Introduction, Understanding Pointers, Accessing the Address of a Variable, Declaring and Initializing Pointers, Accessing a Variable through its Pointer. File Handling:- Defining and Opening a File, Closing a File, I/O Operations on Files, Error Handling During I/O Operation.				
Reference and Textbooks: Text Books: Balagurusamy, E. (2017). <i>Programming in ANSI C</i> (8 th ed.). New Delhi: TATA McGraw-Hill Publishing Company Ltd. Seymour Lipschutz. (2010). <i>Data Structures</i> (3 rd ed.). New Delhi: TATA McGraw-Hill, Publishing Company Ltd. Books for Reference: Byron Gottfried, S. (1996). Schaum's outline series. <i>Theory and problems of programming with C</i> . New Delhi: TATA McGraw-Hill Publishing Company Ltd. Ravichandran, D. (2009). <i>Programming in C</i> . New Age International publisher. Venugopal, K.R. & Sudeep Prasad, R. (1997). <i>Programming with C</i> . New Delhi: TATA McGraw-Hill Publishing Company Ltd.					

WEB RESOURCES:

https://www.unf.edu/~wkloster/2220/ppts/cprogramming_tutorial.pdf

https://www.tutorialspoint.com/cprogramming/cprogramming_pdf_version.htm

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

Introduction to Programming in C – NPTEL

Problem solving through Programming in C – SWAYAM

C for Everyone : Programming Fundamentals – Coursera

Outcomes

On Completion of this Course, the students can able to,

- Understand and apply the basic Concepts of Data Structures.
- Describe the fundamental concepts of C Programming.
- Implement the Decision making and Looping Statements, Arrays and Strings.
- Define the User Defined functions, Structures and Unions.
- Put into Practice the Pointers and File Management in C.

Semester - I				
Course Code: 22BCA1P1	Core Practical - I Data Structures & C Programming Lab	T/P P	Credits 4	H/W 4
Objectives	<ul style="list-style-type: none"> ➤ To introduce the basic knowledge of C programming fundamentals. ➤ To impart writing skill of C programming to the students and solving problems. ➤ To implement the basic concepts of Data Structures. 			
Lab Programs	<ol style="list-style-type: none"> 1. Write a Program to initialize, assignment & printing variables of different data types. 2. Write a Program to demonstrate all the operators 3. Write a Program to read marks of a student in six subjects and print whether pass or fail (using if-else). 4. Write a Program to perform arithmetic operations using switch case. <p>Do the Following Programs Using for, while, do-while loops.</p> <ol style="list-style-type: none"> 5. Write a program to calculate sum of individual digits of a given number. 6. Write a program to check whether given number is palindrome or not. 7. Write a program to print prime numbers in the given range. 8. Write a program to store 10 elements in the 1-D array and print sum of the array. 9. Write a program to print minimum and maximum elements in the 1-D array. 10. Write a program to count no. of positive numbers, negative numbers and zeros in the array. 11. Write a program to perform matrix addition and matrix subtraction. 12. Write a program to perform various string manipulations 13. Write a program to print the given strings in ascending order. 14. Write a program to verify the given string is palindrome or not (without built-in functions, with using built-in functions). 15. Write a program to concatenate two strings using arrays. 16. Write a program to swap two numbers using a) Call By Value B) Call By Reference. 17. Write a program to find total marks of individual student and average marks for 10 students using structures. 18. Write a program which copies the contents of one file to another file using command line arguments. 19. Program to Implement the Stack Operations 20. Program to Implement the Queue Operations 21. Program to implement the Linked list 			
Reference and Textbooks:				
AL Kelly & Ira phol (1998). <i>Programming in C</i> (4 th ed.). Addison-Wesley–Professional.				
Balaguruswamy, E. (2019). <i>Programming in ANSI C</i> (8 th ed.) TATA Mc Graw-Hill.				
Brain Kernighan, W., & Dennis Ritchie (1988) <i>C Programming Language</i> (2 nd ed.). PHI.				
Gray Brosin, J. (2006). <i>A first book of ANSI C</i> (3 rd ed.). Cengage Learning India P. Ltd.				

Jeri Hanly, R., & Elli Koffman, B. (2013). *Problem Solving and Program Design in C* (7th ed.). Pearson. ISBN-13: 978-0-13-293649-1, ISBN-10: 0-13-293649-6.

Pradip Dey & Manas Ghosh (2013). *Programming in C* (2nd ed.) Oxford University Press.

Outcomes	On Completion of this Course, the students can able to, <ul style="list-style-type: none">➤ Read, understand and trace the execution of programs written in C language.➤ Write the C code for a given algorithm and Implement programs with pointers and arrays, perform pointer arithmetic, use the pre-processor.➤ Write programs that perform operations using derived data types.➤ Develop the programs to implement the concepts of Data Structure.
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