

Branch Name:	Computer Engineering, Information Technology Artificial Intelligence & Machine Learning (AI/ML)
Program Code:	ET404
Course Name:	Computer Programming - II
Course Code:	2ET4000208
Pre-requisite Course:	Basic knowledge of “C” Programming

Course Objectives: (Min 3)

1. Understand the basic concepts of C programming.
2. Implement arrays, functions and pointers.
3. Ability to design, analyses and develop Computer programs, Interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
4. Gain skills to handle strings and files.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	4	5	60	40	40	60	200

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Multi-Dimensional Arrays and String Two Dimensional Arrays, Initialization, Matrix Addition, Matrix Multiplication, String, Multidimensional arrays	08	20
2	Functions Introduction, Definition of Functions, Built in and user defined function, String Handling, Functions, Math Functions, Use Defined Function Declaration, Categories of Functions, Nesting of Functions, Actual Parameter and Formal Parameter, Call by value and call by Reference, Recursion	09	20
3	Pointers Introduction to Pointers, Accessing Address of the variables, Declaring the Pointer Variables, Initialization of Pointer Variables, Pointer and Arrays, pointer to pointer, void pointers	09	20
4	Structure and Union Introduction to Structure, Declaration and Initializations of Structure, Access Structure variables, Arrays of the Structure, Array in Structure, Introduction to Union, Difference between Structure and Union	08	20
5	File and Command line argument File Operations: open, read, close, File mode: text, binary, File Functions: fprintf(), fscanf(), getc(), putc(), fgetc(), fputc(), fseek(), feof(), Command Line argument	05	12
6	Dynamic Memory Allocation Introduction, malloc(), calloc()	03	08

SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS:

1. Write a minimum 4 program for two-dimensional array.
2. Write a program to perform matrix addition.
3. Write a program to perform matrix multiplication.
4. Write at least 2 programs for multi-dimensional array.
5. Write a program to store and retrieve string in array.
6. Write a program to perform for built in string functions.
7. Write a program to perform for built in math functions.
8. Write a program to perform different function related program.
9. Write a program to perform nesting of functions.
10. Write a program for recursion.
11. Write a program to perform call by value and call by reference.
12. Write a program for pointer. (at least 8)
13. Write a program to display address of variable. (at least 5)
14. Write a program for array of pointer.
15. Write a program for void pointer.
16. Write a program for structure. (at least 3)
17. Write a program for array of structure.
18. Write a program for Union.
19. Write a program for file operations.
20. Write a program for command line arguments.
21. Write a program for malloc () and calloc ()

Text Books / Reference Books:

Sr. No.	Title of Books	Author	Publication
1.	Programming in ANSI C	E Balagurusamy	McGraw Hill
2.	Let Us C	Yash Avant Kanetkar	(BPB Publications)

List of Open-Source Software/learning website:

- a. <https://www.beginnersbook.com/>
- b. <https://www.tutorialspoint.com/>
- c. <https://www.geeksforgeeks.org/>
- d. <https://www.vlab.co.in/>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Read, understand and trace the execution of programs written in C language	2 Understanding 4 Analyze
CLO2	Write the C code for a given algorithm.	6 Creating
CLO3	Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.	3 Applying 6 Creating
CLO4	Write programs that perform operations using derived data types	3 Applying 6 Creating
CLO5	Able to make simple data processing applications also he/she must be able to use the concept of array of structures. Student must be able to define functions, union and enumeration user defined data types.	5, 3, 4, 6 Evaluate, Applying, Analyze, Creating
CLO6	Able to Construct programs that demonstrate effective use of C features including arrays, structures, pointers and files.	6 Creating

Course Learning Outcomes	Program Outcomes (Pos)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CLO1	M											
CLO2	H											
CLO3	H						M					
CLO4	M					L						
CLO5	H	M		M			H					
CLO6	M	L		L								L

H: High, M: Medium, L: Low