Semester-2

KU2DSCCSC108: ADVANCED PROGRAMMING WITH C

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	DSC	100-199	KU2DSCCSC108	4(3T+1P)	75

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
Lecture	Practical/ Internship	Tutorial	CE	ESE	Total	
3	2	-	35	65	100	1.5hrs.

Course Description:

The course enables to use advanced C programming language constructs and techniques to create more structured and portable code. Topics included various data storing structures like Arrays, Structure, union, Functions and File concepts Use advanced pointer concepts to allow very flexible data access and create arrays of pointers, arrays of structures and unions, and pointers to arrays of structures and unions.

Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	Understand the concept of storing multiple datatypes using structure and union	A

2	Understand the concept of pointers and their usage in memory management	U/A
3	Identify the usage of function and apply the functions in programming	U/A
4	Discuss the usage of file concept in programming	An
5	Apply various data accessing and storing concepts in C language and write program code to solve real life problems.	A/An

**Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)*

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO7
CO 1	3	3	2			1	
CO 2	3	3	2			1	
CO 3	3	3	2			1	
CO 4	3	3	2			1	
CO 5	3	3	2			1	2

COURSE CONTENTS

Contents for Classroom Transaction:

MODULE	UNIT	DESCRIPTION	HOURS
1		**STRUCTURE and UNION**	
	1	Structure	15
		a) Structure declaration and Initialization	
		b) Array of structure variables	
		c) Array within structure	
		d) programs to implement usage of structure	
		Union : Union declaration and Initialization, memory allocation, and accessing union members.	

	2	b) Simple programs using union, Difference between Union and Structure	

2	**POINTERS**		
	1	a) Declaring pointers, accessing data though pointers	15
		b) NULL pointer , Array access using pointers	
		c) Pointer Arithmetic	
		d) **Dynamic Memory Allocation:** Allocating and deallocating memory using functions like malloc(), calloc(), realloc(), and free().	

3	**INTRODUCTION TO MODULAR PROGRAMMING**		
	1	Functions	15
		a) Function prototype, definition and calling , types of functions	
		b) Writing functions, formal parameters, actual parameters, types of functions based on arguments and return types	
	2	Recursion , argument passing mechanisms	
	3	Arrays as Function Parameters	
	4	Structures as Function Parameters	
	5	Storage Classes	
	6	Simple programs using functions	

4	**FILES AND COMMAND LINE ARGUMENTS**		
	1	File Operations	15
		a) open, close, read, write, append	
		b) Sequential access and random access to files: Built-in file handling functions (rewind(), fseek(), ftell(), feof(), fread(), fwrite()), c) Writing and Reading files in Text Format	
		d)Writing and Reading in Binary Format	
	2	a) Command Line Argument	
		b) Variable Number of Arguments	

5	**Teacher Specific Module**	**5**

List of Sample programs:

STRUCTURE

1. Create a structure to store the name, UID, marks of five subjects of students in a class.

   Display the rank list of the students.

2. Using structure, read and print data of n employees (Name, Employee Id and Salary)

UNION

3. Declare a union containing 5 string variables (Name, House Name, City Name, State and Pin code) each with a length of C_SIZE (user defined constant). Then, read and display the address of a person using a variable of the union.

FUNCTIONS

4. Read a string (word), store it in an array and obtain its reverse by using a user defined function.
5. Find the sum of digits of a number using a user defined function.
6. Read an array and perform sorting by passing the array to a user defined function

POINTERS

7. Do the following using pointers
   i) Add two numbers

   ii) Swap two numbers using a user

   defined function

8. Input and Print the elements of an array using pointers.

9. Compute sum of the elements stored in an array using pointers and user defined function.

FILES

10. Create a file and perform the following

i) Write data to the file ii) Read the data in a given file & display the file content on console iii) Append new data and display on console

	11. Open a text input file and count number of characters, words and lines in it; and store the results in an output file. **COMMAND LINE ARGUMENTS** 12. Program to illustrate the use of command line arguments	
		5

Essential Readings:

1. Schaum Series, Gottfried B.S.,Tata McGraw Hill,Programming with C
2. E. Balagurusamy, Mcgraw Hill,Programming in ANSI C
3. Asok N Kamthane, Pearson,Programming in C
4. Anita Goel, Pearson, Computer Fundamentals

Suggested Readings:

1. Anita Goel and Ajay Mittal, Pearson, Computer fundamentals and Programming in C
2. Brian W. Kernighan and Dennis M. Ritchie, Pearson, C Programming Language
3. Rajaraman V, PHI, Computer Basics and Programming in C
4. Yashavant P, Kanetkar, BPB Publications, Let us C

Assessment Rubrics:

Evaluation Type		**Marks**	**Evaluation Type**		**Marks**	**Total**
Lecture		**75**	**Practical**		**25**	**100**
a)	**ESE**	**50**	a)	**ESE**	**15**	
				Program code and execution	**8**	
				Output	**3**	
				Viva	**2**	
				Modification	**2**	
b)	**CCA**	**25**	b)	**CCA**	**10**	

	i	Test Paper	5		i	Punctuality	3	
		Model exam	10					
	ii	Assignment/ Book-Article review /field report	5		ii	Model exam	4	
	iii	Seminar/ Viva-Voce	5		iii	Record	3	

KU2DSCCSC109: DATA MANAGEMENT PLATFORM

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
2	DSC	100-199	KU2DSCCCSC109	4 (3T+1P)	75

Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
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3	2		35	65	100	1.5 hrs.

Course Description:

This course introduces the core principles and techniques required in the design and implementation of database systems. This course focus on relational database management systems, including database design theory: E-R modeling, data definition and manipulation languages, database security and administration.

Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains