Detailed Syllabus

Lab-wise Breakup

15B17CI171 **Software Development Fundamental Lab - I**

Develop C programs using varied data types, expressions, conditional structure (if-else), and iterative control structure (do-while, while, for), one or multidimensional arrays and functions. Store heterogeneous data and perform basic queries over it. Programs using pointers and recursive functions like palindrome, factorial, Fibonacci series, number system etc. Write menu driven C programs to perform basic file operations (create, read, write, update).

Course Code	**15B17CI171**	**Semester** ODD	**Semester: 1st Session:** 2021 -2022 **Month from:** Sep –Dec
Course Name	Software Development Fundamentals Lab-1		
Credits	1	**Contact Hours**	4

Faculty (Names)	**Coordinator(s)**	Mradula Sharma & Apeksha Aggarwal (J62), Himanshu Mittal & Swati Gupta (J128)
	Teacher(s) (Alphabetically)	J62: Amanpreet Kaur (APR), Amarjeet (AJP), Anita Sahoo (ASA), Ankita Verma (AV), Anuja Arora (AA), Apeksha (APA), Archana Purwar (ARP), Arpita Jadhav Bhatt (APJ), Bharat Gupta (BG), Hema N (HN), K.Rajalakshmi (KRL), Kavita Pandey (KP), Megha Rathi (MGR), Mradula Sharma (MSH), Neetu Sardana (NSA), Niyati Aggrawal (NIY), Potukuchi Raghu Vamsi (PRV), Purtee Kohli (PRK), Sakshi Agarwal (SAA), Shulabh (SHB), Suma Dawn (SUD), Vikas Hassija (VH), Nistha (NIS), Pratishtha (PRT), Jaspal Kaur (JP) J128: Akanksha Bhardwaj, Arti Jain, Bansidhar Joshi, Himani Bansal, Mukesh Saraswat, Mukta Goyal, Nitin Shukla, Payal Khurana BAtra, Pulkit Mehndiratta, Raju Pal, Rashmi Kushwa, Shariq Murtuza, Shilpa Budhkar, Swati Gupta, Varsha Garg, Surendra Kumar

COURSE OUTCOMES		COGNITIVE LEVELS
C172.1	Develop programs/logic for data types, expressions and conditional structure.	Apply (level 3)
C172.2	Perform programs for array and functions.	Apply (level 3)
C172.3	Implement programs for structure and union.	Apply (level 3)
C172.4	Perform programs of pointers and recursive functions.	Apply (level 3)
C172.5	Implement menu driven programs to perform basic file operations.	Apply (level 3)

Module No.	Title of the Module	Topics in the Module	No. of Weeks (2 Labs/Week)
1	Logic Building, Puzzles	Developing logic/flow-chart/pseudo code to solve problems, simple/logical games, puzzles	2 Weeks
2	Data Type, Statements, Expressions, Operators	Data, variables and constants, data types, operators – binary, unary, ternary, operator precedence, associativity	1 Week
3	Control Flow	Develop C programs using conditional structure (if, if-else, nested if), and iterative control structure (do-while, while, for). Implement switch case statement.	2 Weeks
4	Array and String	Array initialization, reading and writing operations with array, one dimensional, two-dimensional array, strings, and related operations like addition, multiplication, traversal, transpose etc.	2 Weeks
5	Functions	User defined functions and inbuilt functions, Functions definition, declaration, calling, Pass by value, functions with array	1 Week
6	Structures and Union	Struct keyword, Structure and Union, Structure variable, dot operator, arrow operator, Array of Structures, structure using functions.	2 Weeks
7	Pointers	Pointers in C, Dynamic memory allocation for 1D/2D array and structures, Arithmetical operations on pointers, functions using pass by reference, recursive functions like palindrome, factorial, fibonacci series, number system etc	2 Weeks

8	File Handling	File creation, Modes of File Handling like read, write, update; different types of files like binary file and text file and respective operations like, opening, closing, reading, writing, end of file, traversing the file for structured and unstructured data	2 Week
Total Number of Labs			14 Weeks

Evaluation Criteria

Components	**Maximum Marks**
Lab Test -1	20
Lab Test -2	20
Day to Day	60
Evaluation 1	15
Evaluation 2	15
Mini Project	15
Attendance	15
Total	**100**

Project based learning: Each student in a group of 3-4 will develop a mini project with the help of various concepts of software development fundamental. In a team they will learn how to apply the concepts for problem solving in a meaningful way.

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1	H. Cooper and H. Mullish, Jaico Publishing House. "Spirit of C", 4th Edition, Jaico Publishing House, 2006
2	Herbert Schildt. "The Complete Reference C ", 4th Edition, TMH, 2000
3	Brian W. Kernighan and Dennis M. Ritchie ,"The C Programming Language", 2nd Edition, Prentice-Hall India, New Delhi, 2002
4	Peter Norton, "Introduction to Computers", 5th edition, Tata McGraw-Hill, Delhi., 2005.
5	Balaguruswamy, Programming in ANCI C", 2nd Edition, TMH, 2001.
6	Ashok N. Kamthane , "Programming with ANSI and Turbo C", Pearson Education, Delhi, 2003
7	Rajaraman V., "Fundamentals of Computer", 3rd Edition, Prentice-Hall India, New Delhi, 2005.
8	B. A. Forouzan, R. F. Gilberg "Computer Science: A Structured Programming Approach Using C", 2nd Edition, Thomson Press, New Delhi, 2006.
9	Avi Silberschatz, Henry F. Korth, and S. Sudarshan, "Database System Concepts", 6th edition, McGraw-Hill, 2010.