

23ES11P1 –COMPUTER PROGRAMMING LABORATORY

(Common to all Branches)

Course Category:	Engineering Science	Credits:	1.5
Course Type:	Practical	Lecture - Tutorial - Practical:	0-0-3
Prerequisite:	Basic mathematical knowledge to solve problems and computer fundamentals.	Sessional Evaluation:	30
		Univ.Exam Evaluation:	70
		Total Marks:	100
Objectives	The course aims to give students hands – on experience and train them on the concepts of the C-programming language.		

Course Outcomes	Upon successful completion of the course, the students will be able:	
	CO1	Read, understand, and trace the execution of programs written in C language.
	CO2	Identify the right control structure for solving the problem.
	CO3	Implement C programs which utilize memory efficiently using programming constructs like pointers.
	CO4	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C
Course Content	<u>LIST OF EXPERIMENTS</u>	
	<p>Lab1: Familiarization with programming environment</p> <ul style="list-style-type: none"> i) Basic Linux environment and its editors like Vi, Vim & Emacs etc. ii) Exposure to Turbo C, gcc iii) Writing simple programs using printf(), scanf() <p>Lab 2: Converting algorithms/flow charts into C Source code. Developing the algorithms/flowcharts for the following sample programs</p> <ul style="list-style-type: none"> i) Sum and average of 3 numbers ii) Conversion of Fahrenheit to Celsius and vice versa iii) Simple interest calculation <p>Lab 3: Implement Programs on Data types, Operators, and Expressions.</p> <p>Lab4: Demonstrate the significance of operator precedence and associativity in Expression Evaluation using C.</p> <p>Lab 5: Implement decision-making constructs: if-else, goto, switch-case, break-continue in C.</p> <p>Lab 6: Demonstrate the scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue using C programming.</p> <p>Lab 7:(a) Develop programs on one dimensional arrays and multidimensional arrays. (b) Implement Linear Search technique in C.</p>	

	<p>Lab 8: (a) Implement various Matrix operations. (b) Implement String manipulation operations without predefined functions. (c) Implement Bubble Sort Technique</p> <p>Lab 9: Demonstrate Pointers & structures and memory dereference using C.</p> <p>Lab10: (a) Demonstrate the differences between structures and unions using a C program. (b) Create and display a singly linked list using self-referential structure. (c) Implement shift/ rotate operations on bit fields</p> <p>Lab 11: (a) Implement parameter passing technique: call-by-value. (b) Demonstrate scope and lifetime of variables in the context of subroutines and functions.</p> <p>Lab 12: Implement Recursive functions.</p> <p>Lab 13: (a) Implement parameter passing technique: call-by-reference. (b) Demonstrate the purpose of Dangling pointers using a C program.</p> <p>Lab 14: Implement various File operations (Open, Close, Read, Write, Append, and so on).</p>
<p>Text Books and References</p>	<p>Text Books:</p> <ol style="list-style-type: none"> 1. Ajay Mittal, Programming in C: A practical approach, Pearson. 2. Byron Gottfried, Schaum' s Outline of Programming with C, McGraw Hill
	<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India 2. C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE
<p>Web Resources</p>	<ol style="list-style-type: none"> 1. https://www.w3resource.com/c-programming-exercises/ 2. https://www.onlinegdb.com/