

GANPAT UNIVERSITY										
FACULTY OF ENGINEERING & TECHNOLOGY										
Programme		Bachelor of Technology				Branch/Spec.	Computer Engineering / Information Technology/CE-AI			
Semester		II				Version	2.0.0.1			
Effective from Academic Year			2022-23			Effective for the batch Admitted in			July 2022	
Subject code		2ES1104	Subject Name			Programming for Problem Solving				
Teaching scheme						Examination scheme (Marks)				
(Per week)		Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
		L	TU	P	TW					
Credit		2	-	2	-	4	Theory	40	60	100
Hours		2	-	4	-	6	Practical	30	20	50
Pre-requisites										
Not required										
Course Outcomes										
On successful completion of the course, the students will be able to:										
CO1	Formulate simple algorithms for arithmetic and logical problems.									
CO2	Implement conditional branching, iteration and recursion.									
CO3	Use arrays, strings and functions to formulate algorithms and programs.									
CO4	Design and develop programs using Pointers.									
CO5	Design and implement programs using structures, unions and file handling functions.									
CO6	Apply the skill of identifying appropriate programming constructs for problem solving.									
Theory Syllabus										
Unit	Content									Hrs
1	Introduction to Computer: Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.). Idea of Algorithm: Steps to solve logical and numerical problems, Flowchart/Pseudo code with examples, From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code.									04
2	Operators, Decision Making and Looping: Arithmetic expressions and precedence, Conditional Branching and Loops, Writing and evaluation of conditionals and consequent branching, Iteration and loops, Storage Classes and Scope rules.									06
3	Arrays: Arrays (1-D, 2-D) , Multi-dimensional array and Row/column major formats, Character arrays and Strings, String Handling functions.									03
4	Basic Algorithms: Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required)									03
5	Function: Functions (including using built in libraries), Parameter passing in functions, call by value, Passing arrays to functions, idea of call by reference									03
6	Recursion: Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort.									02
7	Structure and Union: Structures, Defining structures and Array of Structures, Union concept.									02
8	Pointers: Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, Pointers and Function Arguments, Pointers and Arrays, Address Arithmetic, character Pointers and Functions, Pointer Arrays, Pointer to functions.									05
9	File handling: Standard I/O, Formatted Output – printf, Formatted Input – scanf, Variable length argument list, file access including FILE structure, fopen, stdin, stdout and stderr, Error Handling including exit, error and error.h.									02

Practical Content	
Practical, assignments and tutorials are based on above syllabus.	
Text Books	
1	Programming in ANSI C by E Balagurusami –Tata MacGraw-Hill.
Reference Books	
1	Let's C, by Yashvant Kanetkar-BPB Publication
2	Programming in C by Ashok Kamthane- Pearson Publication.
3	The C Programming Language by Brian W. Kernighan / Dennis Ritchie
4	Computer Programming in C by V Rajaraman, PHI.
5	C Programming Language by Brian Kernighan and Dennis M. Ritchie
6	Outline of Programming with C by Byron Gottfried, Schaum's , McGraw-Hill
ICT/MOOCs Reference	
1	https://nptel.ac.in/courses/106/105/106105171/
2	https://www.mooc-list.com/course/c-everyone-structured-programming-coursera

Mapping of CO with PO and PSO:															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	2	0	1	0	2	3	2	3	2	2	2
CO2	3	2	2	2	3	0	0	0	2	1	2	2	1	1	1
CO3	3	2	2	2	2	0	0	0	1	0	1	1	1	1	1
CO4	3	1	3	2	2	0	0	0	2	0	2	1	2	2	2
CO5	3	1	2	2	2	0	0	0	2	0	1	1	1	1	1
CO6	3	3	3	3	3	0	2	0	2	1	2	2	1	1	1