



Course Syllabus
Gyanmanjari College of Computer Application
Semester-1 (BCA)

Subject : C Programming For Effective Problem Solving - BCAXX11301

Type of course: Major Core

Prerequisite: Basic knowledge of Computer

Rationale:

Computer programming has an integral role in our world. Technology production is an essential part of an evolving world. This means that computer programming is exceptionally important for our future as a global society. Computer programming can help create this future by automating processes, collecting data, analyzing information and sharing knowledge to continuously innovate and improve upon existing processes.

The objective of this course to familiarize students to the techniques of programming in C and Apply programming constructs of C language to solve the real-world problems within the framework of structural and procedural programming paradigms. This specialization develops strong programming fundamentals for learners who want to solve complex problems by writing computer programs.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		C	SEE		CCE		
			Theory		Practical	MSE	LWA	ALA	
3	0	2	4	75	25	30	20	50	200

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; MSE- Mid Semester Examination; LWA - Lab Work Assessment; V – Viva voce; CCE- Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.

3 Credits * 25 Marks = 75 Marks (each credit carries 25 Marks) Theory
1 Credits * 25 Marks = 25 Marks (each credit carries 25 Marks) Practical
SEE 100 Marks will be converted in to 50 Marks
CCE 100 Marks will be converted in to 50 Marks
It is compulsory to pass in each individual component.



Continuous Assessment:

(For each activity maximum-minimum range is 5 to 10 marks)

Sr. No	Active Learning Activities	Marks
1	Flowing Logic: Prepare Algorithm and Flowchart for the given definitions and upload it on the moodle.	10
2	Bug Detectives : Students will be assigned a code containing intentional errors, students need to identify errors, correct and upload on moodle.(group of Four)	10
3	Revealing the Output : Students will be assigned a pseudo code. They have to analyze the code & get the output and upload it on the moodle.	10
4	Assignment : Assignment of 10 questions will be given; Students have to upload the solved assignment on the moodle.	10
5	Attendance	10
Total		50

Course Content:

Sr. No	Course content	Hrs	% Weightage
1	Introduction of Programming Language Fundamentals <ul style="list-style-type: none"> • Basic Introduction to programming language and types of programming language • Flowcharts • Algorithm • Introduction to C:History, Concept of Translator, Compiler, Interpreter, Assembler, Structure of C program, Compilations & Execution of C program • Character Set, Keywords, Identifier, Data Type, Variable and Constant • Evaluation of Expression ,Type casting • Formatted Input and output statements • Operators 	12	30%



2	<p>Decision Statements and Control Structure Conditional branching statements:</p> <ul style="list-style-type: none"> • Simple if statement • If-else statement • Nested If-else statement • If-else-if Ladder statement • switch statements <p>Unconditional branching statement:</p> <ul style="list-style-type: none"> • goto Control Statements • for loop • While loop • Do-while loop • Nested for loop <p>Break and continue statements</p>	10	25%
3	<p>Array and String handling Array:</p> <ul style="list-style-type: none"> • Introduction to an Array • A characteristics of an array • One dimensional array: Declaration, initialization and accessing • Two-dimensional array: Declaration, initialization and accessing • Introduction to a String: Declaration and Initialization of String, gets() and puts() 	9	20%
4	<p>Functions</p> <ul style="list-style-type: none"> • Concept of modular programming • Type of Function • Declaration, Calling, and Defining a function. • Passing Array and string as function argument • Recursion • Built-in Function: String , maths, input output function etc 	8	15%
5	<p>Introduction to pointer</p> <ul style="list-style-type: none"> • Introduction • Features • Pointer Declaration and Initialization 	3	10%

Suggested Specification table with Marks (Theory):75

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	25 %	45 %	10 %	10 %	10 %	00 %



Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course the students should be Able to :	
CO1	Students should be able to formulate simple algorithms and flowchart for arithmetic and logical problems
CO2	Students should be able to Analyze built-in and user defined functions and Apply control structures to develop programs
CO3	Students can use arrays, pointers, string handling functions and structures to develop programs
CO4	Students will be able to write and implement C programs to solve real-world problems
CO5	Students will acquire the ability to identify and correct errors in C code, enhancing their debugging and troubleshooting capabilities

List of Practical

Sr. No.	Descriptions	Unit No.	Hrs
1	Write Simple C programs to display a message on screen. Write a C Program to Print an Integer Entered by the User. Write a C Program to Find ASCII Value of a Character.	1	2
2	Write a C program for summation, subtraction, multiplication, division of two number using Arithmetic operator. Write a C Program to Multiply Two Floating-Point Numbers. Write a C Program to Compute Quotient and Remainder.	1	2
3	Write a C program to compute area of a square. Write C Program to Find the Simple Interest. Write a C program to swap 2 numbers using a third variable and without using a third variable.	1	2
4	Write a C programs using the Bitwise, Increment and Decrement operator.	1	2
5	Write a C programs using Conditional ,Comma ,size of operators. Write a C program using statements: if , if...else.	2	2
6	Write Minimum 5 C programs using Nested if , if...else ladder.	2	2
7	Write a C Program using switch and goto.	2	2
8	Write C programs using the for loop, while loop,do...while loop,	2	2
9	Write C programs using Nested for loop, Break and continue statements. Write minimum 5 pattern programs using loop structures.	2	2



10	Write C program using Array: one dimensional array, two dimensional array.	3	1
11	Write a C program to find Largest element from the given array. Write a C Program to Calculate Average Using Arrays. Write a C program to sort the elements of an array in ascending order. Write a C Program to search element in array	3	2
12	Write a C Program to Count the Number of Vowels, Consonants from String. Write a C Program to Find the Length of a String	3	2
13	Write a C Program to Copy String Without Using strcpy(). Write a C Program to Concatenate two Strings. Write a C Program to Find the Frequency of Characters in a String.	4	2
14	Write Minimum 5 C programs using user defined functions.	4	2
15	Write a C programs by applying the recursion. Write a C Program use of inbuilt function: string functions and Math functions.	4	1
		Total	28

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory.

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

- [1] Programming in ANSI C : E. Balagurusamy
- [2] Programming with ANSI and Turbo C : Ashok N. Kamthane
- [3] Let us 'C' : Yashavant Kanetkar
- [4] C Programming for Problem Solving : Dr. Guruprasad Nagraj
- [5] Programming with ANSI and Turbo C : Ashok N Kamthane

