Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Science College
Semester-2 (M.Sc.)

Subject: Programming with C (MSCMA12511)

Type of course: Major

Prerequisite: Prior knowledge in computer architecture, programming languages, memory concepts, and basic high-level language constructs including variables, expressions, control structures, and functions.

Rationale: Programming with C serves as the theoretical foundation of calculus. It aims to provide a rigorous framework for the concepts introduced in calculus, such as limits, derivatives, and integrals. By establishing a solid mathematical basis.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				Theory Marks		Practical Marks		CA	
CI	T	P	C	ESE	MSE	V	P	ALA	
3	0	0	3	60	30	10	-	50	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Content:

Unit No.	Course content	Hrs	% Weight age
1	**CHAPTER 1:** Overview of Computers and Languages: Abstract view of the computer, stored program concept, Memory: Cache memory, main memory, secondary memory. Types of Programming Languages: High & Low-level language, Compiler, Interpreter, internal representation of integer and floating-point numbers.	15	25
2	**CHAPTER 2:** Logic Development: Problem Analysis, Flowcharts, algorithms, Variables, Expression & its manipulation, Data types in High-level language, I/O statements, Assignment statement, Arithmetic operators, logical operators, relational operators. Analyze the problem and can develop the logic.	15	25
3	**CHAPTER 3:** Structured Programming & Functions: Control strategies, Condition & Loop Statements. Method of Structured Programming, library functions, Detailed look into math.h functions.	15	25

4	**CHAPTER 4:** Complex Data Types: Arrays, Programming: Implementation of Vector operations using one-dimensional arrays, Implementation of matrix operations using two-dimensional arrays, Solving systems of linear equations in two variables: Cramer's rule.	15	25

Continuous Assessment:

Sr. No.	Active Learning Activities	Marks
1.	**Coding / Decoding :** Faculty will assign Mathematical problem base C-language and Students solve problem by program and upload to the GMIU web portal.	10
2.	**Programming:** Faculty will provide a problem and students will write Programme in 'C' and upload it to the GMIU web portal.	10
3.	**Poster Making:** Student will prepare a cheat sheet related to Programme in 'C' and make A3 size poster and upload it to the GMIU web portal.	10
4.	**Analysis :** Faculty will assign scientific pictures and students will analyze and prepare a report in 100 words and upload it to the GMIU web portal.	10
5.	**Concept mapping :** Faculty will assign real time project / problem that Students map their Idea, Solution for real time project / problem and upload it to the GMIU web portal.	10
	Total	**50**

Course Outcome:

After learning the course the students should be able to:	
CO1	Understand the principles of object-oriented programming.
CO2	Analyze problems and formulate logical solutions.
CO3	Apply structured programming principles, utilize library functions effectively, and demonstrate a comprehensive understanding of functions in programming.
CO4	Write programs involving one-dimensional and two-dimensional array programming.

Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	10%	40%	20%	10%	20%	-

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.

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, MCQ 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

Reference Books :

1. E. Balagurusamy : Programming in ANSI C, Tata McGraw-Hill Publishing Co. Ltd.

2. Cooper H. & Mullish H. : The Sprit of C, Jaico Publication House, New Delhi.

3. Kernighan B. W. & Ritchie D. M : The C Programming Language, Prentice Hall, India.

4. Gottfried: Programming with C, Tata McGraw-Hill Publishing Co. Ltd.

5. C Programming language, Kernighan Brian W.