COURSE MODULE: PROGRAMMING AND PROBLEM SOLVING IN C

Course Coordinator: Prof. Divyashree B K				Academic Year:**2024-25**	
Department: Master of Computer Application					
Course Code	**Course Title**	**Core/Elective**	**Prerequisite**	**Contact Hours** L:T: P:S	**Total Hrs/ Sessions**
MMC101	PROGRAMMING AND PROBLEM SOLVING IN C	IPCC		3:2:0:0	40(TH) + 10(LAB)

Course Learning Objective:

The course will enable the students to:

1. Implement the constructs of C Language.
2. Construct C Programs using basic programming constructs
3. Develop C programs using arrays and strings
4. Organize modular applications in C using functions
5. Integrate pointers and structures in C applications and Execute input/output and file handling in C

Teaching-Learning Process (General Instruction):

1. Adopt different types of teaching methods to develop the outcomes through PowerPoint presentations and Video demonstrations.
2. Adopt collaborative (Group Learning) Learning in the class.
3. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills and develops thinking skills such as evaluating, generalizing, and analyzing information.

Module-1

BASICS OF C PROGRAMMING Introduction to programming paradigms Applications of C Language - Structure of C program - C programming: Data Types - Constants – Enumeration Constants - Keywords – Operators: Precedence and Associativity - Expressions - Input/Output statements, Assignment statements Decision making statements - Switch statement - Looping statements – Preprocessor directives - Compilation process

TLP: Power Point Presentation, Chalk and Talk

Module-2

ARRAYS AND STRINGS Introduction to Arrays: Declaration, Initialization – One dimensional array Two dimensional arrays - String operations: length, compare, concatenate, copy – Selection sort, linear and binary search.

TLP: Power Point Presentation, Chalk and Talk

Module-3

FUNCTIONS AND POINTERS Modular programming - Function prototype, function definition, function call, Built-in functions (string functions, math functions) Recursion, Binary Search using recursive functions – Pointers Pointer operators Pointer arithmetic Arrays and pointers – Array of pointers – Parameter passing: Pass by value, Pass by reference.

TLP: Power Point Presentation, Chalk and Talk

Module-4

STRUCTURES AND UNION Structure - Nested structures – Pointer and Structures – Array of structures Self referential structures Dynamic memory allocation - Singly linked list typedef Union - Storage classes and Visibility.

TLP: Power Point Presentation, Chalk and Talk

Module-5

FILE PROCESSING Files Types of file processing: Sequential access, Random access Sequential access file - Random access file - Command line arguments.

TLP: Power Point Presentation, Chalk and Talk

Course Outcomes:

At the end of the course, the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Demonstrate knowledge on C Programming constructs	L5
CO2	Develop simple applications in C using basic constructs	L4
CO3	Design and implement applications using arrays and strings	L5
CO4	Develop and implement modular applications in C using functions	L4
CO5	Develop applications in C using structures and pointers	L4

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

CIE for the theory component of IPCC

1. Two Tests each of 20 Marks
2. Two assignments each of 10 Marks/One Skill Development Activity of 20 marks
3. Total Marks of two tests and two assignments/one Skill Development Activity added will be CIE for 60 marks, marks scored will be proportionally scaled down to 30 marks.

CIE for the practical component of IPCC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. The 15 marks are for conducting the experiment and preparation of the laboratory record, the other 05 marks shall be for the test conducted at the end of the semester.
- The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report. Each experiment report can be evaluated for 10 marks. Marks of all experiments' write- ups are added and scaled down to 15 marks.
- The laboratory test at the end /after completion of all the experiments shall be conducted for 50 marks and scaled down to 05 marks. Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory component of IPCC for 20 marks.

SEE for IPCC

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the course (duration 03 hours)

1. The question paper will be set for 100 marks and marks scored will be scaled down proportionately to 50 marks.
2. The question paper will have ten questions. Each question is set for 20 marks.
3. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module.
4. The students have to answer 5 full questions, selecting one full question from each module.

The theory portion of the IPCC shall be for both CIE and SEE, whereas the practical portion will have a CIE component only. Questions mentioned in the SEE paper shall include questions from the practical component).

- The minimum marks to be secured in CIE to appear for SEE shall be the 15 (50% of maximum marks-30) in the theory component and 10 (50% of maximum marks -20) in the practical component. The laboratory component of the IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 04/05 questions to be set from the practical component of IPCC, the total marks of all questions should not be more than the 20 marks.
- SEE will be conducted for 100 marks and students shall secure 40% of the maximum marks to qualify in the SEE.

Marks secured will be scaled down to 50. (Student has to secure an aggregate of 50% of maximum marks of the course(CIE+SEE)

List of Text Books

1. Reema Thareja, "Programming in C", Oxford University Press, Second Edition,2016.
2. Kernighan B.W and Ritchie D.M, "The C Programming Language", Seconf Edition, Pearson Education,2015

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code: MMC101	TITLE: PROGRAMMING AND PROBLEM SOLVING IN C								Faculty: DIVYASHREE B K			
List of Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	2				3						3
CO-2	3	2			3							
CO-3	3	2	3									
CO-4	3	2	3						3			
CO-5	3	2	3						3			
Total												

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution - = No Contribution