Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY END SEM University Exam	Two Term Exam	Teachers Assessment*	PRACTICAL END SEM University Exam	Teachers Assessment*
GPCA101	GE	C Programming	2	0	2	3	60	20	20	30	20

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
*Teacher Assessment shall be based on following components:
Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):
- To familiarize the students with programming and to encourage them to develop their logic.
- To make students well versed with C language to solve problems efficiently.
- Using simple and well-drawn illustrations develop their programming skills using modular programming.
- To make the students well versed with the knowledge of pointer and structure.

Course Outcomes (COs): Student will be able to:
- Develop algorithms for problems.
- Apply the programming concepts to solve the given problems.
- Write the programs using modular programming.
- Write the programs using pointers and to manage memory.

Unit I:

Overview of C: Introduction to Procedural Programming Languages, Features of C, Structure of C program. C Tokens: C character set, identifiers and keywords, data types: primitive and user defined. Operators and Expressions, Type modifiers and type casting.

UNIT II:

Control Structures: Loops (for, while and do-while), Decision Control (if, if-else, if-else ladder), Special Constructs: break, continue, exit(), goto and labels, switch-case. Input/ Output: Unformatted and Formatted I/O functions in C.

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Unit III:

Functions: Definition, prototype, Function call, parameters passing – call by value and call by reference. Return value. Storage Classes in C: auto, extern, register and static, their scope,Recursion, Recursion v/s Iteration, types of recursion.

Unit IV:

Arrays: Definition, Access of Elements, initialization; Multidimensional arrays, character arrays.

Pointer: address and dereferencing operators, declaration, assignment, initialization. pointer to pointer. pointer and arrays, Array of pointers and its limitation, Function returning pointers; Pointer to function, Function as parameter.

Unit V:

Dynamic memory management :malloc(), calloc(), realloc(), free() etc.

Structure: Structure –basic, declaration, membership operator, structure within structure, array in structure, array of structure.

List of Experiments:

1. Define an algorithm and flowchart. Draw algorithm and flow chart for a program that converts an input Fahrenheit degree into Celsius equivalent.

2. Write an algorithm and a C program to find the greatest among three numbers.

3. WAP to print an input string in lower case, upper case and mixed case using library function.

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4. WAP a C program to reserve an input number.

5. Draw a flow chart to find prime number from 1 to 100.

6. Write a C program to obtain the sum of first n terms of the following series: $X - X^3/3! + X^5/5! - X^7/7! + \ldots$

7. WAP to calculate factorial of a number using different loops.

8. WAP to calculate factorial of a number using recursion.

9. WAP in C to generate Fibonacci series.

10. WAP in C to generate Pascal triangle.

11. WAP in C to swap value and address of two variables.

12. WAP in C to search a given element in an array using linear and binary search.

13. WAP to sort an integer array in ascending and descending order according to user's choice.

14. Write a menu driven program to perform matrix addition, subtraction and multiplication.

15. Write a program to sum diagonal elements of two matrices.

16. WAP a C program to reverse a string by recursion.

17. WAP using structure in C to generate student mark-sheet for 3 students with student details name, course, and semester and with marks in 5 subjects, assume max mark in each subject as 100 and passing marks as 35.

Text Books:

1. KanitkarYashwant, Let us C", Edition 16th 2017, BPB, New-Delhi.

2. Balaguruswami, Ansi C, McGraw Hill Education; Eighth edition 2019,TMH, New-Delhi.

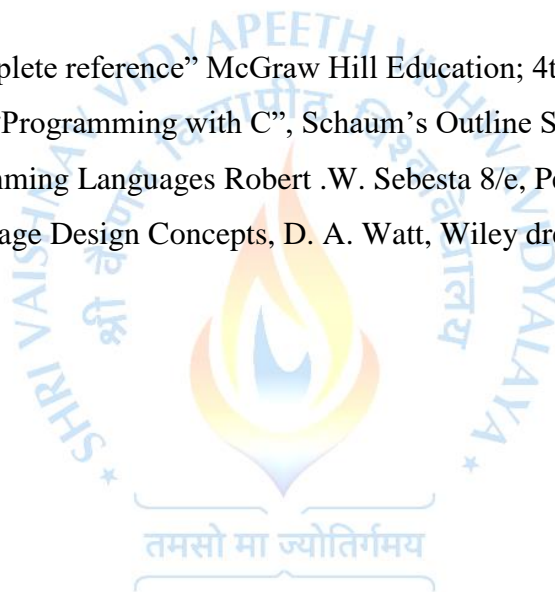| Chairperson	Chairperson	Controller of Examination	Joint Registrar
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3. Kerninghan & Ritchie "The C programming language", Pearson Education India; 2 edition (2015), PHI.

4. Schildt "C:The Complete reference" McGraw Hill Education; 4th edTMH, 2017.

5. Byron S. Gottfried, "Programming with C", Schaum's Outline Series Mcgraw –Hill, II-Ed.

6. Concepts of Programming Languages Robert .W. Sebesta 8/e, Pearson Education, 2008.

7. Programming Language Design Concepts, D. A. Watt, Wiley dreamtech,rp-2007.