PARUL UNIVERSITY - Faculty of IT & Computer Science

Department of Computer Application

SYLLABUS FOR 1st Sem BCA, IMCA PROGRAMME

Fundamentals of Programming using C(05101104)

Type of Course: BCA, IMCA

Prerequisite: Basic approach of problem solving methods

Rationale: The objective of this course is to familiarize students with concepts of fundamentals of information technology along with developing the logic for solving a given problem using the procedure oriented language C for construction of code

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	4	5	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Overview of C**: History, Algorithm and flowchart, Structure of C Elements of C: Character set, C Tokens, Keywords Identifiers, Variables, Constant Data Types, Comments, C Programming Applications and Importance, Operators: What is operator?, Types of operator, Built-in Operators: Input/output operators, Concept of header files	13%	6
2	**Pre-processors, Storage Classes**: Introduction, Different pre-processors:#include, #define • Importance. Storage Classes: Automatic, External, Static and Register Variables, Decision Making / Control Statements: If, If Else, Nested if, Switch, Looping statements: For, Nested for, While, Do while, Other statements: Break, Continue, Goto, exit.	13%	6
3	**Array**: Declaration , Initialization , Access of one dimensional & two dimensional arrays, Programs using one and two dimensional arrays: Adding multiplying, Transposing matrices: sorting and searching arrays	19%	9

4	**Function, Structure and Union**: Definition, Need of function, Types of function, Built-in and User define Functions, User define Functions, Categories of functions: With/without arguments, With/without return values, Recursion, Functions with arrays, The scope, visibility & lifetime of variables. Structure definition, Giving values to members, Structure initialization, Comparison of structure variables, Arrays of structures, Arrays within structures, Structures within structures, Structures & functions, Unions Size of structures	22%	11
5	**Pointer and Working with Strings**: Understanding pointers, Accessing the address of a variable, Declaring & initializing pointers, Accessing a variable through its pointer, Pointer expression, Pointer increments & scale factor, Pointers & arrays, Passing pointer variables as function arguments. Declaring & initializing string variables, Reading strings from terminal, writing strings to screen, Arithmetic operations on characters, putting strings together, comparison of two strings, string handling functions, table of strings.	20%	10
6	**Files: Introduction, File operations**: i. Opening a File, ii. Reading a File iii. Closing a File Text modes I/O operations on files Binary modes Command line arguments File function fprintf() ii. fscanf() iii.getc() iv.putc() v. fgetc() vi.fputc() vii.fseek () viii. feof()	13%	6

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Programming in ANSI C
   E. Balaguruswamy; Tata McGraw-Hill
2. The C Programming Language (TextBook)
   Brian W. Kerningham and Dennis M. Ritchie; PHI
3. Programming with C
   K.R. Venugopal and Sudeep R Prasad; Tata McGraw-Hill Education
4. Let Us C
   Yeshavant Kanetkar; BPB Publications

List of Practical:

1. **WAP to Add Two Integers**
2. **WAP to Floating Point Numbers**
3. **WAP to print ASCII Value of a Character**
4. **WAP to Find Quotient and Remainder (hint : use / and % operator)**
5. **WAP to Swap Two Numbers (with and without temp variable)**

6. **WAP to Find Area of Circle**

7. **WAP to Find Simple interest**

8. **WAP to Sum of 5 subjects and Find total and percentage**

9. **WAP to Find Gross salary of an employee**

10. **WAP to Find a Number is Even or Odd**

11. **WAP to Find Roots of a Quadratic equation**

12. **WAP to Check Whether a Character is an Alphabet or not**

13. **WAP to Find Sum of Natural Number**

14. **WAP to Find Factorial of a Number**

15. **WAP to Print following patterns**

16. **WAP to print Fibonacci Series**

17. **WAP to Find GCD of two Numbers**

18. **WAP to Find LCM of two Numbers**

19. **WAP to Display Character from A to Z Using Loop**

20. **WAP to Reverse a Number**

21. **WAP to Check Whether a Number is Palindrome or Not**

22. **WAP to Find Prime Numbers Between Two Intervals (have to use two loops)**
23. **Write program to check number is prime or not. (single loop)**

24. **WAP to Check Number is perfect**

25. **WAP to Create Pyramid and Structure**

26. **WAP to Draw Pascal's triangle**

27. **Write a menu-driven program using Switch case to calculate the following**

Area of circle

Area of square

Area of sphere

28. **Write a menu-driven program using Switch case to create calculator**

29. **WAP to calculate square and cube of a given number using function**

30. **WAP to swap two numbers using function**

31. **WAP to calculate area of circle using function and with all four categories**

32. **WAP to add two distance using function.(Use inch and feet for the calculation)**

33. **WAP to calculate sum of elements of 1D array using function**

34. **WAP to find factorial of a number using function**

35. **WAP to add two 2D arrays using function**

36. **WAP to store records for book and also display using structure**

37. **WAP to print and display records of employee details using array of structure**

38. **WAP to display marks of 3 subjects for 3 students and then calculate total for subject wise and then make grand total**

39. **WAP to display Id, name and percentage of a student using structure and function passing by value**

40. **Write a C program to create a structure student, containing name and roll. Ask user the name and roll of a student in main function. Pass this structure to a function and display the information in that function**

41. **WAP to access addresses of different types of variable using pointer. (Include all type of variables)**

42. **WAP to swap two integers using pointers**

43. **WAP to compute area and perimeter of rectangle using pointers as parameter to function**

44. **WAP to store values of array and display it using pointers**

45. **Write a C program to read string from terminal. Using scanf(), gets to read a string**

46. **WAP to pass string to a function and find length of it**

47. **WAP to concatenate two strings and copy the string 1 to string 2**

48. **WAP to sort elements in lexicographical order (dictionary order ascending order)**

49. **WAP to convert binary numbers to decimal and vice a versa**

50. **Write a C program to read name and marks of n number of students from user and store them in a file**

51. **Write a C program to read name and marks of n number of students from user and store them in a file. If the file previously exits, add the information of n students**

52. **Write a C program to write all the members of an array of structures to a file using fwrite(). Read the array from the file and display on the screen**

Co1 : student is able to analyses the problem and write an algorithm and can able to draw flowchart.

Co2 : students can able to minimize the coding length.

Co3: