

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 1st Sem BTech PROGRAMME

Programming for Problem Solving (203105102)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
4	-	2	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	Number System:: Introduction and type of Number system, Conversion between number system, Arithmetic operations on number system, Signed and unsigned number system Software, Computer Languages and Computer Program	2%	4
2	Introduction to 'C' Programming: Features of C language, structure of C Program, Flow Charts and Algorithms Types of errors, debugging, tracing/stepwise execution of program, watching variables values in memory.	3%	4
3	Constants, Variables and data Types: Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Assigning values to variables, typedef, and Defining symbolic constants.	5%	4
4	Operators and Expression:: Introduction to Operators and its types, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associativity	10%	4
5	Management Input and Output Operators:: Introduction, reading a character, writing a character, formatted input, formatted output.	5%	2

6	Control structure in C: Decision Making & branching: Decision making with If & If .. Else statements, If .. Else statements (Nested Ladder), The Switch & goto statements, The ternary (?:) Operator Looping: The while statement, The break statement & The Do.. While loop, The FOR loop, Jump within loops – Programs	15%	5
7	Array:: Introduction, One-dimensional arrays, Two-dimensional arrays, arrays, Concept of Multidimensional arrays	10%	5
8	String:: string , string storage , Built-in-string functions	10%	4
9	User-Defined Functions: Concepts of user defined functions, prototypes, definition of function, parameters, parameter passing, calling a function, recursive function, Macros, Pre-processing.	10%	7
10	Structure and Unions:: Introduction, Structure definition, declaring and initializing Structure variables, Accessing Structure members, Copying & Comparison of structures, Arrays of structures, Arrays within structures, Structures within Structures, Structures and functions, Unions	10%	6
11	Pointers:: Basics of pointers, pointer to pointer, pointer and array, Pointer to array, array of pointers , functions returning a pointer	10%	5
12	Dynamic memory allocation: Introduction to Dynamic memory allocation, malloc(), calloc(), free(), realloc()	5%	3
13	File Management in C:: Introduction to file management and its functions	5%	3

***Continuous Evaluation:**

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

Reference Books:

1. Programming in ANSI C (TextBook)
E. Balaguruswamy; Tata McGraw-Hill
2. C Programming: Test Your Skills
Ashok Kamthane
3. Computer Fundamentals
P.K.Sinha and Priti Sinha; BPB Publications; 4th Edition
4. Star C Programming
; STAR Certification; C Certification Exam
5. Programming with C
Byron Gottfried; Tata McGraw Hill Education
6. C The Complete Reference
Herbert Schildt

7. Let Us C
Yeshavant Kanetkar; BPB Publications

List of Practical:

1. 1. Write a program to print HELLO FRIENDS! 2. Write a program that reads two nos. from key board and gives their addition, subtraction, multiplication, division and modulo. 3. Write a program to convert days into months and days. 4. Write a program which calculates the summation of three digits from the given 3 digit number. 5. Write a program to calculate simple interest
2. 1. Write a program to find the largest of the three nos. using Nested-If-Else statement. 2. Write a C program to enter a character and to check whether it is a small letter or it is a capital letter or it is a digit or it is a special symbol. 3. Write a program to read marks of a student from keyboard whether the student id pass (if). 4. Write a program to find the sum of first N odd numbers. 5. Write a program using while loop construct which finds the factorial of a given integer n
3. 1. Write a program which sorts 10 numbers into ascending order. 2. Write a program to find maximum element from 1-D array. 3. Write a program to find number of odd and even elements from the 1-D array. 4. Write a program add two 2x2 matrices. 5. Write a program to count vowels from a entered String. 6. Write a program which finds whether a string is a palindrome or not.
4. 1. Write a program to find factorial of a number using recursion. 2. Write a program that used user defined function Swap () and interchange the value of two variable. 3. Write a function to return 1 if the number is prime otherwise return 0.
5. 1. Define a structure type, personal that would contain person name, date of joining and salary. 2. Define a structure called cricket that will describe the following information: Player name Team name Batting average
6. 1. Write a program to add two numbers using pointers. 2. Write a program to swap two numbers using pointer.
7. 1. Write a program to illustrate reading files contents. 2. Write a program to illustrate the use of fgets().
8. 1. Write a C program using do...while and for loop constructs to reverse the digits of the number. 2. Write a program to demonstrate use of Switch- Break Statement. 3. Write a program to find out all the numbers divisible by 5 and 7 between 1 to 100. Check for Armstrong number. A number is Armstrong if sum of cube of every digit is same as the original number. E.g. $153=1^3+5^3+3^3=153$ 4. Write a program to print the output of bellow series. $1!+2!+3!+4!+ \dots + n!$ 5. Write a program to print th