

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**NITK-Surathkal**

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**Course Plan and Evaluation Plan**  
**I Sem B. Tech 2014-15 [Odd Semester]**

1. **Course code :** CO111
2. **Course Title :** Computer Programming Lab
3. **L-T-P :** (0-0-2)
4. **Credits :** 1
5. **Course Instructors:**  
Mr.B.R.Chandavrkar-S8 Section
6. **Teaching Department :** Computer Science & Engineering
7. **Objective of the Course:**
  - Learning to code and debug C programs in a Unix environment.
  - Implement programming strategies to understand various C language concepts.
8. **Skill development expected from the course:**
  - Develop efficient and modular C code.
  - Develop programming skills, logical thinking and reasoning for problem solution.

9. **Course Coverage:**

Topics	Lab Hours
Unix shell commands	3
Basic Input-Output functions	3
Operators and Expressions	3
Decision making and Branching constructs	3
Decision making and looping constructs	3
Arrays	3
Strings	3
Functions and Recursions	6
Structures and Union	3
Pointers	3
Files and file operations	3
<b>Total</b>	<b>36</b>

## 10. Course Contents

### Unix shell commands SSH Shell

Introduction to basic commands on SSH shell

### Basic Input-Output functions

1. To find Simple and Compound Interest
2. To read the radius of a circle and find its Area and Perimeter.
3. To read the temperature in Fahrenheit and convert it to degree centigrade.
4. Find the area of triangle when two sides are given.
5. Program to read two numbers and print the sum of given two numbers.
6. Program to accept student roll no, marks in 3 subjects and calculate total, average and print it.
7. An Employee Basic Pay is to be read through keyboard. DA is 40% of BP, HRA is 20% of BP, Calculate the gross pay ( $GP=BP+DA+HRA$ ).
8. To read price of an item in decimal form and print it in paisa.
9. Program to find distance between two points (x1, y1) and (x2, y2).
10. Program to swap two numbers using temp variable.

### Operators and Expressions

1. Program to illustrate the use of Arithmetic, Relational, Logical, assignment, Conditional, increment or decrement, bitwise, special operators, associativity and precedence of operators.

### Decision making- and Branching constructs

1. Program to find even sum and odd sum of given range of number.
2. To find largest of 3 input numbers.
3. To determine whether character entered is lowercase, uppercase, digit or a special character.
4. Find the roots of quadratic equation
5. To test for leap year.
6. To accept a number and print in words of reverse numbers
7. Program to demonstrate the arithmetic calculator
8. Program to print number of days in a month.
9. Program to print Square and cube of a number.

10. Program to find next date, If the given date for example 28/02/2013 next date is 01/03/2013.

### Decision making and looping constructs

1. To find the reverse of an integer and find whether the given integer and Reversed values are equal,
2. Program to check Armstrong number.
3. To check number is a prime or not.
4. To print factorial of a given number.
5. To print fibonacci of a given number.
6. Program to accept a three digit number and print the sum of individual digit.
7. Program to print numeric pyramid
8. Program to accept a number and print mathematical table of the given number.
9. GCD and LCM of two numbers.
10. Program to print perfect square in the given range.

### Arrays

1. To read an array of N elements and reverse it.
2. To find smallest and second smallest element in an array.
3. To search for a key in an array using i)Linear search ii)Binary search
4. To sort array elements in ascending order using Bubble sort method.
5. To count the frequency of array elements
6. To find the transpose of a given matrix
7. To add and multiply two matrices.
8. To find trace and norm of a square matrix.
9. To find the maximum element in each row and each column of a matrix.
10. To find the sum of each row and each column in a given matrix.

### Strings

1. To read a string and find its length without using library functions.
2. To check whether a given string is Palindrome or not.
3. Program to reverse a given string.
4. To concatenate two strings.
5. To count the number of words in a string
6. To delete a sub string from main string.
7. To replace a given string by another string of equal length.
8. To delete extra blank spaces in a string
9. Program to delete all the occurrences of vowels in a given text.
10. Program to arrange N names in alphabetical order.

## Functions

1. To find GCD of two numbers and use this function to find GCD of N numbers.
2. Write a function to find factorial of a number
3. Write a function to find fibonacci of a number
4. Program to sort elements of given array using selection sort
5. Program to find position of the largest element in the given array.
6. Program to find length of a string.
7. Program to copy a string to another.
8. Program to compare two strings.
9. Program to evaluate the equation  $y = x^1 + x^{12} + x^3 + \dots x^n$
10. To add and multiply two matrices.

## Recursion

1. To find factorial of a number
2. To generate Fibonacci series.
3. To display given string.
4. To search a number using binary search method
5. To find gcd of two numbers.
6. To find the value of  $X^n$
7. To find Fibonacci of a number.
8. To find sum of integers from 1 to N
9. To find sum of series  $1 + 1/3! + 1/5! + \dots + 1/N!$ .
10. To calculate triangle numbers of entered number.

## Structures and Union

1. Program to input and display book information.
2. Program that takes coordinates of the centre point and a point on a circle as input and prints radius and area of a circle.
3. Program to accept 5 people name, address and telephone number and to search for the information of a particular person.
4. Accept the name, reg\_no, marks in 6 subjects of N students. Find total and average of each student. Sort this array of structures
  - i. Based on name.
  - ii. Based on reg\_no.
  - iii. Accept a reg\_no and search for this student using binary search
5. To accept name, register number, marks in 3 subjects of n students.
  - i. Find the average marks for each student and sort them in ascending order of average marks.
  - ii. Display the details of a student given his register number

8. Store the item number, item name, unit price and quantity in stock of N items in a Super market. Display the following list of items present in the stock.
  - i. List of items with unit price greater than Rs.129/
  - ii. List of items with quantity in stock less than 5.

### Pointers

1. Count frequency of every character present in a line of text.
2. Write functions for the following string operation.
  - a) Concatenation. b). Comparison. c) Length d) Copy e) Reverse.
3. Program to swap two numbers.
4. Program to find sum and difference of two given numbers
5. To print biggest of two numbers.
6. To find area and circumference of a circle.

### Files and file operations

1. Program to read data from keyboard write it in a file called DATA.txt again read the same data from the file and display it on the screen.
2. Program to read and print number of alphabets and digits in a file.
3. A file named DATA contains a series of integer numbers. write a program to read these numbers and then write all odd numbers to a file to be called ODD and all even numbers to a file to be called EVEN.
4. Write a program to open file in read mode and count number of lines and No. of characters in a file.
5. Copy the content of one file into another.

### Course Instructors

Mr. B. R. Chandavarkar

### Head of the Department