2018-19 Onwards (MR-18)	MALLA REDDY ENGINEERING COLLEGE (Autonomous)	B.Tech. I Semester		
Code: 80502	PROGRAMMING FOR PROBLEM SOLVING LAB (Common for CE, EEE, ME, ECE, CSE, IT and Min.E)	L	T	P
Credits: 1		-	-	2

Course Objectives:
This course provides the fundamental concepts of computers and introduce to the students to the field of programming using C language, apply the control structures, iterations statements, arrays, functions, strings, pointers, structures, unions and files. This course also explains the concepts of searching and sorting techniques in C language.

Software Requirements: Turbo C

List of Programs:

1. a. Practice various Internal and External DOS Commands.
   b. Implement various programs logics using algorithms and flowcharts.
   c. Write sample examples of C programs to implement basic operations.
2. a. Write a C program to find smallest and largest of given three numbers.
   b. Write a C program to find the roots of a quadratic equation.
3. a. Write a C program to find the sum of individual digits of a positive integer.
   b. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
   c. Write a C program to generate the first n terms of the sequence.
4. a. Write a C program to find whether the given number is palindrome, perfect, Armstrong or strong.
   b. Write a C program to generate all the prime numbers between n1 and n2, where n1 and n2 are values supplied by the user.
5. Write C programs that use both recursive and non-recursive functions
   a. To find the factorial of a given integer.
   b. To find the GCD (greatest common divisor) of two given integers.
6. a. Write a C program to find both the largest and smallest number in a list of integers.
   b. Write a C program that uses functions to perform the following:
      i. Addition of Two Matrices
      ii. Multiplication of Two Matrices
7. a. Write a C program that uses functions to perform the following operations:
      i. To insert a sub-string into given main string from a given position.
      ii. To delete n characters from a given position in a given string.
   b. Write a C program to determine if the given string is a palindrome or not
   c. Write a C program to find substring in a given string.
   d. Write a C program to count the lines, words and characters in a given text.

8 a. Write a C program to implement functions arguments with different returns values.
   b. Write a C program to implement call by value and call by reference using functions.
9 a. Write a C program to find grades of a student's using structures and unions.
   b. Write a C program to implement nested structures.
10 a. Write a C program which copies one file to another.
   b. Write a C program to command line arguments.
11 a. Write a C program that uses non-recursive function to search for a Key value in a given list of integers using linear search.
   b. Write a C program that uses recursive and non -function to search for a Key value in a given sorted list of integers using Binary search.
12 a. Write a C program that implements the Selection sort method to sort a given array of integers in ascending order.
   b. Write a C program that implements the Bubble sort method to sort a given list of names in ascending order.

TEXTBOOKS

1. PradipDey, ManasGhosh, **"Programmingin C**", Oxford University Press, 2nd Edition, 2011.
2. E.Balagurusamy, "**Computer Programming in C"**, Tata McGraw Hill, 1st Edition, 2013.

REFERENCES

1. Brian W. Kernighan, Dennis M. Ritchie, "**The C Programming Language"**, PHI, 2nd Edition, 1990.
2. Greg Perry and Dean Miller, "**C ProgrammingAbsolute beginner's guide**", QUE Publishers, 3rd Edition, 2013.
3. Paul Deitel and Harvey Deitel, "**C How to Program"**, PHI, 7th Edition, 2012.
4. Behrouz A. Forouzan, E.V.Prasad, Richard F.Gilberg, "**C programming: A Problem-Solving Approach**", Cengage Learning Press, 1st Edition, 2011.

Course Outcomes:

At the end of the course, students will be able to

1. Analyze concepts in problem solving do programming in C language and write diversified solutions using C language.
2. Identifysituations where computational methods and computers would be useful.
3. Understandthe programming tasks using techniques learned and write pseudo-code.
4. Comparethe program on a computer, edit, compile, debug, correct, recompile and run it.
5. Identifytasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task