**University of Management and Technology**

School of Engineering

Department of Electrical Engineering

**Course Outline**

Course code: CS-143L Course Title: Programming Fundamentals Lab

|  |  |
| --- | --- |
| Program | BSEE |
| Credit Hours | 1 |
| Duration | One semester |
| Prerequisites | Nil |
| Resource Person | Saleem Ata (All Sections) |
| Counseling Timing  (Room# ) | See Office doors |
| Contact | saleemata@umt.edu.pk |

**Learning Objective:**

This Lab is of an introductory course in programming that is a pre-requisite for almost subsequent courses related to programming. The course will introduce the students to problem solving using at first pseudo code and then C language. We shall be using plenty of problems from arithmetic for programming. We shall get to know the concepts of variables, data types and program flow in the C language. These shall be used to construct working solutions to the problems posed. Later on the use of functions will be introduced to break up the solutions into manageable chunks. The use of Arrays will be introduced. The concept and use of pointer-variables will be dealt with as well as their relation to the arrays in C. The use of null-terminated character arrays as string will be taught. The course directly contributes to objectives a, d, e and f of the HEC Electrical Engineering Curriculum.

* Understand and find the output of simple C program that incorporates different type of variables, expressions (arithmetic and logical), selection and iteration.
* Understand and find the output of more complex programs containing arrays and invoking (calling) functions having input and output arguments using pointers.
* Design and implement simple program using basic syntax of C language such as assignment, expressions, selections and iterations
* Practice modular programming by developing more complex C programs made of functions passing data between them using arrays, input and output arguments.

**Learning Methodology:**

Practical’s, interactive, participative

**Grade Evaluation Criteria**

Following is the criteria for the distribution of marks to evaluate final grade in a semester.

**Marks Evaluation Marks in percentage**

Lab Manuals & Performance: 40%

Final Viva or Quiz + Performance: 60%

Total100%

**Recommended Text Books:**

**Text book:** H. M. Dietel and P.J. Deitel, “C How to Program ”, 7th Edition, Pearson Education, 2012

**Reference Books:**

1) *Kernighan and Ritchie, “The C Programming Language”, 2nd Edition, Prentice Hall, 2009*

**Calendar of Course contents to be covered during semester**

Course code: CS-143 Course title: Programming Fundamental lab

|  |  |
| --- | --- |
| **Week** | **Course Contents** |
| 1. | Introduction to C program & how to run &compile it. |
| 2 | Data Types |
| 3 | Expressions |
| 4 | Selections |
| 5 | Repetitions |
| 6 | Data Files |
| 7 | Functions (with Input parameters) |
| 8 | Functions(Functions with output parameters using pointers and recursive) |
| 9 | 1-D Array(How to read & write elements in 1-D array) |
| 10 | 1-D Array(How to use 1-D array with functions) |
| 11 | 1-D Array(Linear& Binary(iterative & recursive both) searching & Selection & Bubble Sort) |
| 12 | Strings |
| 13 | 2-D Array |