Course Title: Computer Organization and Programming

Programme and Semester: B.Tech. MnC Semester I

Credit Structure(L-T-P-Cr): 3-0-0-3

Course Code: MC112

Prerequisites (if any): none

Instructor’s Name with email: Prof. Shruti Bhilare (shruti_bhilare@daiict.ac.in)

Course Objectives:
Students shall be able to write simple programs in assembly language and high level language, C and understand how they are executed by the hardware inside the computer in the different layers of abstraction.

Suggested Textbook:
Introduction to Computing Systems: From Bits and Gates to C and Beyond 2nd Edition by Yale N. Patt and Sanjay J. Patel

Other References:
• Computer organization and architecture designing for performance by William Stallings
• Computer Organization and Assembly Language Programming, by James L. Peterson
• C Programming by Dennis Ritchie
• C Programming by Balaguruswamy

Mode of Delivery: Online

Evaluation Scheme
• Assignments/Quiz: 30%
• Mid Sem Exam: 30%
• End Sem Exam: 40%
**Course Content:**

Bits, data types and operations: Bit as the unit of information, Integer data types, 2’s complement Integers, binary-decimal conversion, decimal-binary conversion, operations on bits, other representations.

Digital Logic structures: transistor, logic gates combinational logic circuits, basic storage elements, concept of memory, sequential logic circuits.

The Von Neumann model: basic components, Instruction processing, changing the sequence of execution.

LC-3: Instruction set architecture, Operate instruction, data movement instructions, control instructions.

Assembly language: assembly language program, assembly process

Input/Output: basics

Stack: the basic structure

Introduction to C programming: variables and operators, control structures, functions, pointers and arrays, recursion.