Computer Organization and Assembly Language					
Credit	2	**Course Code:**	COSC-3117	**Prerequisites:**	Digital Logic Design

Course Learning Outcomes (CLOs):

At the end of the course the students will be able to:	Domain	BT Level
1. Acquire the basic knowledge of computer organization computer architecture and assembly language	C2(Understand)	2
2. Understand the concepts of basic computer organization, architecture, and assembly language techniques	C2(Understand)	2
3. Solve the problems related to computer organization and assembly language	C3 (Apply)	3

* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain

SDG	Relevant CLOs
SDG 4: Quality Education	*CLO 1:* Acquire the basic knowledge of computer organization computer architecture and assembly language
SDG 9: Industry, Innovation and Infrastructure	*CLO 3:* Solve the problems related to computer organization and assembly language

Course Contents:

Introduction to computer systems: Information is bits + context, programs are translated by other programs into different forms, it pays to understand how compilation systems work, processors read and interpret instructions stored in memory, caches matter, storage devices form a hierarchy, the operating system manages the hardware, systems communicate with other systems using networks; Representing and manipulating information: information storage, integer representations, integer arithmetic, floating point; Machine-level representation of programs: a historical perspective, program encodings, data formats, accessing information, arithmetic and logical operations, control, procedures, array allocation and access, heterogeneous data structures, putting it together: understanding pointers, life in the real world: using the gdb debugger, out of-bounds memory references and buffer overflow, x86-64: extending ia32 to 64 bits, machine-level representations of floating-point programs; Processor architecture: the Y86 instruction set architecture, logic design and the Hardware Control Language (HCL), sequential Y86 implementations,

Teaching Methodology:

Lectures, Written Assignments, Practical labs, Semester Project, Presentations

Course Assessment:

Sessional Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam

Reference Material:

1 Assembly Language Programming for Intel- Computer, Latest Edition
2. Computer System Architecture, M. Morris Mano, Latest Edition,
3. Robert Britton, MIPS Assembly Language Programming, Latest Edition,