

4. INFORMATION TECHNOLOGY DOMAIN ELECTIVE COURSES

Course Title	Computer Organization and Design
Course Code	EI-231
Credit hours	3
Category	IT Elective
Prerequisite	None
Co-Requisite	None
Follow-up	None
Course Description	<p>Introduction: Digital Systems, Binary Representation, Binary Codes, Boolean Algebra (Basic concepts, properties and theorems), Boolean functions, Canonical and Standard Forms of Boolean functions, Simplification of Boolean functions.</p> <p>Digital Logic Circuits: Gates, Circuits, Two-level and Multi-level Logic Circuits, Combinational Circuits, Small Scale Integration (SSI), Design Procedure of Combinational Circuits, Adders, Subtractors, Code Convertors, Analysis of Combinational Circuits, Medium Scale Integration (MSI), Parallel Adder, Magnitude Comparator, Decoder, Demultiplexer, Encoder, Multiplexer, Design of Bus System, ROM Design, Programmable Logic Array (PLA), Sequential Circuits, Latches, Flip-Flops, Design and Analysis of Sequential Circuits, Design of Counters, Registers, Register Transfer, Shift Registers, Micro-operations, RAM Design. Basic Computer Organization & Design: ALU Design, Control Unit Design, Microprogram Control, Computer instruction format, Instruction Set, Instruction Cycle, Instruction Pipeline, Memory Unit, Cache Memory, I/O Operations, Interrupts.</p>
Text Book(s)	1. M. Morris Mano, Digital Logic and Computer Design, 3 rd Edition, Pearson, 1979, ISBN: 0132145103.
Reference Material	1. Thomas L. Floyd, Digital Fundamentals, 10 th Edition, Prentice Hall, 2008, ISBN: 0132359235.