

Computer Organization (1)

Course Name: Computer Organization (1)

Course Code: CAS202

Credit hours: 3

Knowledge Domain: Computer Architecture and System Software.

Prerequisite(s): Automata Models (CAS205)

Learning Objectives:

Upon completion of this course, the student will be able to:

1. Grasp the basic elements of logic circuits and other higher level modules.
2. Demonstrate computer organization & its programming consideration.
3. Illustrate Architecture and organization of central Processing Unit.

Learning Outcomes

1. Grasp how to use logic circuits and registers in the organization of a computer.
2. A reasonable knowledge about the details of the Central Processing Unit.

Overview and syllabus

Digital logic circuits. Digital components. Data representation. Register transfer and microoperations. Basic computer organization and design. Programming the basic computer. Central processing unit.

Course Outline

	Topic
1	<u>Module 01: Overview of Logic Gates and Boolean Algebra</u> Introduction Objectives Lesson 01: Overview of Logic Invert Gates and Boolean Algebra Lesson 02: Combinational Circuit 1 Lesson 03: Combinational Circuit 2 Lesson 04: Flip-Flops And Sequential Circuits Summary Assessment
2	<u>Module 02: Digital Components</u>

	<p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Combinational Components</p> <p>Lesson 02: Sequential Components (1)</p> <p>Lesson 03: Sequential Components (2)</p> <p>Lesson 04: Integrated Circuits (ICS)</p> <p>Summary</p> <p>Assessment</p>
3	<p><u>Module 03: Data Representation</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Number Systems</p> <p>Lesson 02: Type Conversions</p> <p>Lesson 03: Fixed-Point and Floating-Point Representations</p> <p>Lesson 04: Arithmetic Operations with Signed Numbers</p> <p>Summary</p> <p>Assessment</p>
4	<p><u>Register transfer and microoperations</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Register Transfer Language</p> <p>Lesson 02: Arithmetic Microoperations</p> <p>Lesson 03: Logic Microoperations</p> <p>Lesson 04: Shift Microoperations and ALU</p> <p>Summary</p> <p>Assessment</p>
5	<p><u>Basic computer organization and design</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Instruction Codes</p> <p>Lesson 02: Computer Registers and Instructions</p> <p>Lesson 03: Instruction Cycles</p> <p>Lesson 04: Input-Output and Interrupts</p> <p>Lesson 05: Complete Computer Description and Design</p> <p>Summary</p> <p>Assessment</p>
6	<p><u>Module 06: Programming the Basic Computer</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Machine and Assembly Languages</p>

Lesson 02: The Assembler and Program Loops

Lesson 03: Arithmetic and Logic Operations

Lesson 04: Subroutines and I/O Programming

Summary

Assessment