

Microprocessors and Interfacing

Course Name: Microprocessors and Interfacing

Course Code: CAS308

Credit hours: 3

Knowledge Domain: Computer Architecture and System Software.

Prerequisite(s): Computer Organization (1) (CAS202)

Learning Objectives

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

1. Get an overview of micro computer-based applications.
2. Distinguish between different interface concepts and architectures.
3. Grasp the detailed presentation of a typical microprocessor and overview of dual microprocessor architecture.

Learning Outcomes

1. Grasping microprocessor interfacing architectures with examples such as PCI and USB.
2. Grasping the details of a typical microprocessor such as Pentium and its caching architecture.
3. Acquaintance with the basic concepts of multiprocessor architectures.

Overview and Syllabus

Introduction to microprocessors and microcomputer-based applications. Interfacing architecture and peripheral interfaces. Introduction to Pentium processors and its functional units. Cache overview and code/data cache. Dual processors.

Course Outline

	Topic
1	<u>Module 01: Introduction to Microprocessors and Microcomputer-Based Applications</u> Introduction Objectives Lesson 01: Introduction and Historical Background Lesson 02: Evolution of Microprocessor Systems Lesson 03: Microprocessor Based Microcomputers Lesson 04: Computer Data Format Summary Assessment

2	<p><u>Module 02: Microprocessors and its Architecture</u> Introduction Objectives Lesson 01: Microprocessor Registers Lesson 02: Microprocessor Flags Lesson 03: Introduction to Assembly Language -Part I Lesson 04: Introduction to Assembly Language -Part II Summary Assessment</p>
3	<p><u>Module 03: Memory Modes and Addressing Modes</u> Introduction Objectives Lesson 01: Introduction to Memory Modes Lesson 02: Memory Paging Lesson 03: Data Addressing Modes Lesson 04: Program Memory Addressing Mode Summary Assessment</p>
4	<p><u>Module 04: Assembly Language</u> Introduction Objectives Lesson 01: Data Movement Instructions Lesson 02: Miscellaneous Data Transfer Instructions Lesson 03: Arithmetic and Logic Instructions Lesson 04: Program Control Instructions Lesson 05: Introduction to Interrupts Summary Assessment</p>
5	<p><u>Module 05: Hardware Specification and Interface</u> Introduction Objectives Lesson 01: Hardware Specifications Lesson 02: Memory Interface Lesson 03: Basic I/O Interface Lesson 04: I/O Port Address Decoding Lesson 05: Analogue to Digital Converters Summary Assessment</p>
6	<p><u>Module 06: Direct Memory Access and Bus Interface</u> Introduction Objectives Lesson 01: Basic DMA Operation Lesson 02: DMA Controller Lesson 03: Bus Interface and Bus Arbitration Lesson 04: ISA Bus Lesson 05: PCI Bus</p>

	<p>Lesson 06: Printer Interface Summary Assessment</p>
7	<p><u>Module 07: Pentium and Pentium Pro Processors</u> Introduction Objectives Lesson 01: Introduction to the Pentium Lesson 02: Special Pentium Registers Lesson 03: Pentium Memory Management Lesson 04: The Pentium Pro Lesson 05: Pentium II, Pentium III and Pentium 4 Summary Assessment</p>
8	<p><u>Module 08: Caching and Multi-Core Processing</u> Introduction Objectives Lesson 01: Cache Memory and Basic Operation Lesson 02: Caching Architectures Lesson 03: Dual and Multi Core Processing Lesson 04: Cache Coherency Summary Assessment</p>