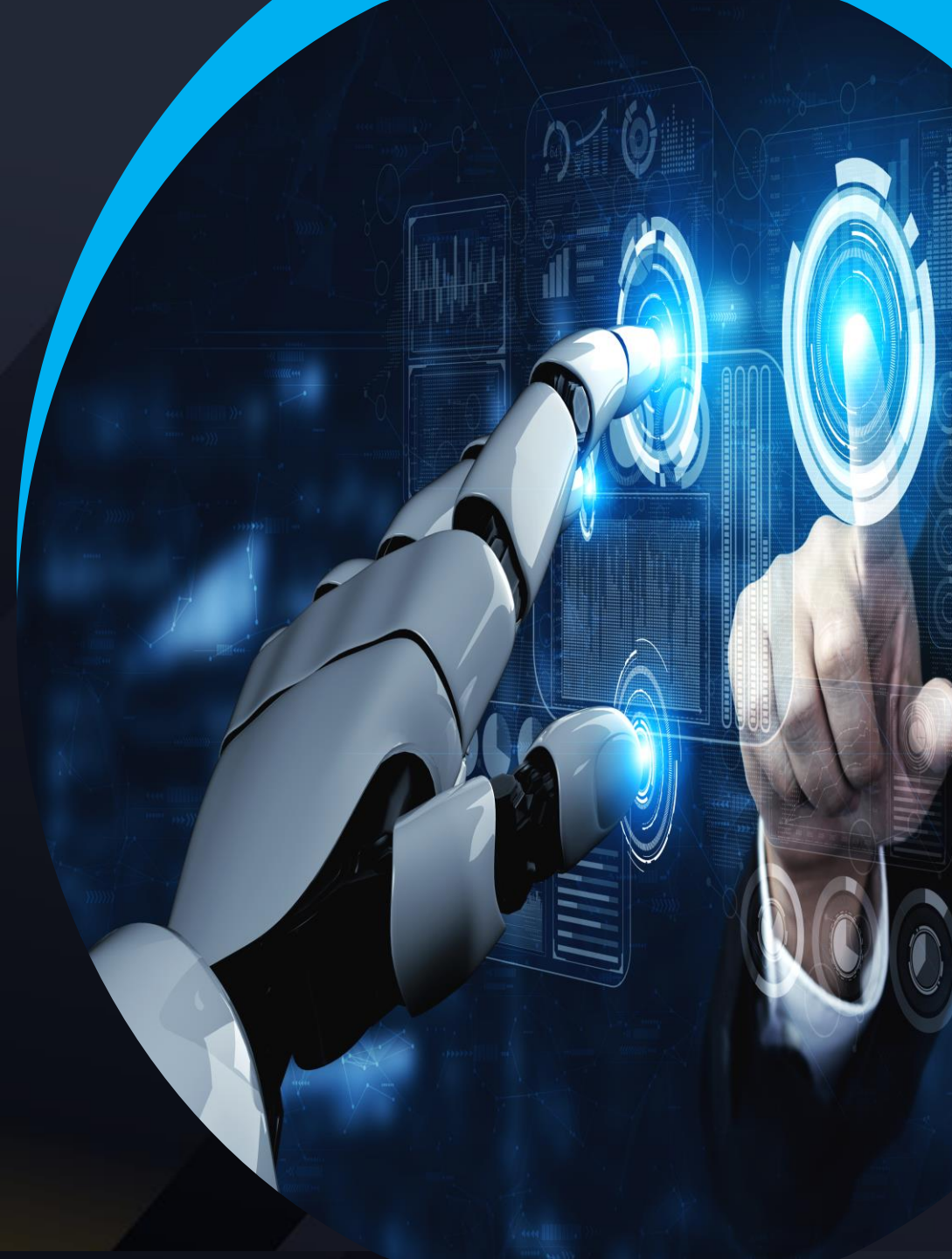


Computer Organization and Architecture

Prepared by Dr. Eng. Gamal Selim

Lecture - Intro



**Chapter
Intro**

Course Overview

In this course, we will introduce Machine Architecture with coverage of digital logic, machine level data and instruction representation, ALU design, and organization of the processor data path and control. Examines performance analysis, memory system hierarchy, pipelining, and communication.

Chapter
Intro

Course content summary

- **Introduction**
 - Organization and Architecture, Structure and Function.
- **Computer Evolution and Performance**
 - A Brief History of Computers, Designing for Performance, The Evolution of the Intel x86 Architecture.
- **A Top-level View of Computer Function and Interconnection**
 - Computer Function.
 - Interconnection Structures, Bus Interconnection, PCI.

Chapter
Intro

Course content summary Cont.

- **Cache Memory**
 - Computer Memory System Overview, Cache Memory Principles, Elements of Cache Design.
- **Internal Memory**
 - Semiconductor Main Memory.
 - Error Correction, Advanced DRAM Organization.
- **External Memory**
 - Magnetic Disk, RAID, Optical Memory, Magnetic Tape.

**Chapter
Intro**

Course content summary Cont.

- **Input/output**
 - External Devices, I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels and Processors, The External Interface.
- **Operating System Support**
 - Operating System Overview, Scheduling.
 - Memory Management.
- **Instruction Sets: Characteristics and Functions**
 - Machine Instruction Characteristics, Types of Operands, Intel x86 and ARM Data Types, Types of Operations

Upon completion of this course, students should be able to:

- Explain digital logic and its use in digital systems.
- Understand machine level representation of data.
- Understand assembly level machine organization.
- Describe the functional organization of a processor data path and performance enhancements.
- Describe memory system organization and architecture.
- Describe interfacing and communication.
- Understand technical literature on computer systems.
- Analyze a computer system's expected performance.



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Position:

- Lecturer at CSE Department, Faculty of Electronic Engineering, Menoufia University – Egypt
- Lecturer at Artificial Intelligence Department, MIDOCEAN University

Education:

- PhD, Computer Science and Engineering Department, Faculty of Electronic Engineering, Menoufia University – Egypt
- MSc, Computer Science and Engineering Department, Faculty of Electronic Engineering, Menoufia University – Egypt
- Diploma of UNIX/Linux Administration at Information Technology Institute (ITI)
- Bachelor's degree, Computer Science and Engineering Department, Faculty of Electronic Engineering, Menoufia University – Egypt

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التقويم الأكاديمي للفصل الدراسي الثالث لعام 2023

2023/09/30

بداية الفصل الدراسي

2023/10/28

آخر موعد للاعتذار عن الفصل
الدراسي وعن المقرر

2023/12/23

بداية الاختبارات النهائية

2023/12/30

نهاية الاختبارات النهائية

مخطط الأسابيع الدراسية للفصل الثالث 2023

الأسبوع 1	2023/9/30	محاضرة توجيحية - اختبار قصير	حلقة نقاش
الأسبوع 2	2023/10/7	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 3	2023/10/14	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 4	2023/10/21	محاضرة - اختبار قصير	حلقة نقاش
آخر موعد للاعتذار عن الفصل أو عن مقرر			
الأسبوع 5	2023/10/28	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 6	2023/11/4	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 7	2023/11/11	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 8	2023/11/18	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 9	2023/11/25	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 10	2023/12/2	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 11	2023/12/9	محاضرة - اختبار قصير	حلقة نقاش
الأسبوع 12	2023/12/16	حلقة نقاش	
الأسبوع 13	2023/12/23	بداية الاختبارات النهائية	
نهاية الدراسة	2023/12/30	نهاية الاختبارات النهائية	

Required Textbook:

Patterson, David A., Hennessy, John L., (2014), *Computer Organization and Design: the Hardware /Software Interface*, (5th Edition). Morgan Kaufmann Publishers, ISBN-13: 978-0124077263, ISBN-10: 0124077269.



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Thank You

