



EASTERN MEDITERRANEAN UNIVERSITY
SCHOOL OF COMPUTING AND TECHNOLOGY
DEPARTMENT OF INFORMATION TECHNOLOGY
COURSE POLICY SHEET



Course Title	Computer Organization and Architecture
Course Code	ITEC255
Type	Full Time
Semester	Fall/Spring
Category	AC (Area Core)
Workload	180 Hours
EMU Credit	(3,0,1) 3
Prerequisite	-
Language	English
Level	Second Year
Teaching Format	3 Hours Online Lectures and 1 Hour Online Tutorial per week
ECTS Credit	6
Course Web Site	https://lms.emu.edu.tr

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Course Description

This course covers basic topics about computer architecture and organization. The course provides the study of the structure, characteristics and operation of modern day computer systems including a basic background on the computers evolution, its design process and its internal characteristics which includes processor components, control unit architecture, memory organization and system organization.

All internal components of a computer including processors, cache memories, random access memories, magnetic disks, optical memories and input/output connections are considered from an architectural perspective. Integer and floating point representation in arithmetic logic unit (ALU) with arithmetical operations are explained. Operating system principles and are also described.

General Learning Outcomes

On successful completion of this course students should be able to:

- Describe computer architecture and organization, computer arithmetic, and CPU design.
- Describe how numbers and characters are represented in a computer.
- Describe I/O system and interconnection structures of computer.
- Draw a block diagram, including interconnections, of the main parts of a computer.
- Describe how a computer stores and retrieves information to/from memory and hard drives.
- Identify high performance architecture design.
- Explain how the cache memory is implemented.
- Explain a wide variety of memory technologies both internal and external.
- Define the terms: bus, handshaking, serial, parallel, data rate.
- Describe various data representations and explain how arithmetic and logical operations are performed by computers.

Teaching Methodology / Classroom Procedures

- The course has three hours of online lectures per week.
- There is one hour online tutorial session per week which is organized for solving questions related to lectures and encourages students to voice their difficulties about solving these questions.
- Lecture notes and tutorials are posted on the course web site.

- There is an online midterm and a final exam.
- There is an assignment. A topic related to computer architecture is given as a research study. A report is written and submitted before the deadline to the instructor. The deadline is announced on the web site.
- Plagiarism test result must be obtained from Turnitin and it must be less than 20 % for submitting the project report, otherwise it will not be accepted. An account will be created for each student on Turnitin to upload their reports and obtain the plagiarism test result.
- Class attendance is compulsory.
- The student is responsible to check the course web site regularly and view the latest announcements.

Course Materials / Main References

Text Book:

William Stallings, Computer Organization and Architecture-Designing for Performance, Ninth Edition, Pearson Higher Education, 2013. ISBN 13: 978-0-13-293633-0

Weekly Schedule / Summary of Topics

Week 1	Distinction Between Computer Organization and Computer Architecture
Week 2	History of Computers and the Evolution of Intel Microprocessors
Week 3	Working principles of microprocessor and Implementation of Interrupts
Week 4	Computer Interconnection Structures, Bus Interconnection, PCI
Week 5	Computer Memory System Overview, Cache Memory, Design Elements and Principles of Cache Design
Week 6	Semiconductor Memories, Random Access Memory, Read Only Memory
Week 7	Error Detection and Correction in Semiconductor Memories, Advanced DRAM Organization
Week 8-9	Midterm Examinations
Week 10	External Memories, Magnetic Disk, RAID, Optical Memory, Magnetic Tape
Week 11	External Devices, I/O Modules, I/O Processors, Direct Memory Access, Different External Interfaces
Week 12	Operating System Overview, Scheduling of Processes
Week 13	Operating System Memory Management
Week 14	Arithmetic Logic Unit, Binary Integer Representation, Binary Integer Arithmetic
Week 15	Binary Floating-Point Representation
Week 16-17	Final Examinations

Requirements

- Each student can have only one make-up exam.
- One who misses an exam should provide a medical report or a valid excuse within 3 days after the missed exam.
- The make-up exam is done at the end of the term and covers all the topics.
- Students who fail to attend the lectures regularly may be given NG grade.
- Once the grades are announced, the students have only one week to do objection about their grades.
- It is the students' responsibility to follow the announcement in the course web site.

Method of Assessment

Evaluation and Grading	Assignment	Midterm Exam	Final Exam
Percentage	20 %	40 %	40 %

Grading Criteria *

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
90 -100	85 - 89	80 - 84	75 - 79	70 - 74	65 - 69	60 - 64	56 - 59	53 - 55	50 - 52	40 - 49	0 - 39

* Letter grades will be decided upon after calculating the averages at the end of the semester and distribution of the averages will play a significant role in the evaluation of the letter grades.