



EASTERN MEDITERRANEAN UNIVERSITY
MASTER OF TECHNOLOGY
COURSE POLICY SHEET

Course Title	Architecture and Hardware
Course Code	ITEC582
Type	Full Time
Semester	Fall/Spring
Category	Area Elective
Workload	150 Hours
EMU Credit	(3,0,0) 3
Prerequisite	-
Language	English
Level	Graduate
Teaching Format	3 Hours Lecture per week
ECTS Credit	5
Course Web Site	http://staff.emu.edu.tr/husnubayramoglu

Instructor(s)	Asst. Prof. Dr. Hüsnü Bayramoğlu	Office Tel	+90 392 6302894
E-mail	husnu.bayramoglu@emu.edu.tr	Office No	CT103

Course Description

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. The concept of reduced instruction set computers (RISC), superscalar processors and superpipelining is explained in detail. The benefits of parallel processing and multicore processors are considered.

General Learning Outcomes

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

- Describe design principles for different instruction sets
- Discuss different register organizations
- Identify processor and register organizations
- Describe instruction pipelining and identify pipeline hazards
- Discuss RISC/CISC processors
- Explain superscalar execution and superpipeline approaches
- Identify symmetric multiprocessors and cache coherency protocols
- Discuss Cluster and NUMA organizations
- Describe multiple processor organizations
- Discuss multicore organizations

Teaching Methodology / Classroom Procedures

- The course has three hours of lectures in a week mainly held in the form of a seminar.
- There is no lab works or tutorials.
- There is one written midterm exam and one written final exam.
- The exams are conducted as a written exam that may contain multiple choice, fill in the blanks, short answer and writing essay questions.
- There is an individual term project.
 - You should find a recent conference/journal paper (published in the last 5 years) related to Computer Architecture and Hardware.
 - The selected paper should be sent as an e-mail to husnu.bayramoglu@emu.edu.tr and wait for the

confirmation.

- Once the topic is confirmed, you can start studying the topic and prepare a written report.
 - The printed report should be submitted before the announced deadline.
 - Late submissions are not accepted.
 - Project grade is out of 25%.
 - The report should be between 3500-4000 words with the format provided in the report template on the web site.
 - Turnitin plagiarism test must be obtained before submission.
 - The plagiarism test result should be less than 20%.
 - No reports are accepted for consideration with higher plagiarism test result.
 - An account will be created for you to make the plagiarism test through Turnitin.
 - The work done for the project should be presented.
 - The duration of the presentation is about 15 minutes for each student.
 - Presentation grade is out of 10%.
- Class attendance is compulsory.
 - Lecture notes are available on the course web site.
 - Course related materials will be posted on the course web site.

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	ARM Data Types, Intel X86 Data Types
Week 2	Variable Length Instructions: PDP-11 Instruction Format, Intel x86 Instruction Format
Week 3	Register Organizations, Pipelining, Pipeline Hazards
Week 4	Instruction Execution Policies, RISC/CISC Processors
Week 5	Instruction Issue Policies
Week 6	Superscalar Execution, Superpipelining
Weeks 7-8	Midterm Examinations
Weeks 9-10	Symmetric Multiprocessors, Cache Coherency Protocols, Cluster Computer Architectures
Week 11	CC-NUMA (Cache Coherent Non-Uniform Memory Access) Organizations
Week 12	Multicore Organizations
Week 13	Presentations for Term Projects
Week 14	Presentations for Term Projects
Week 15	Presentations for Term Projects
Weeks 16-18	Final Examinations

Rules and Obligations

- Each student can have only one make-up exam. One who misses an exam should provide a medical report within 3 days after the missed exam.
- The make-up exam will be organized at the end of the term after the finals and will cover all the topics.
- No make-up will be given for any quiz, project, presentation or assignment.
- 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.

Background Requirements

- Students are expected to have a computer hardware background at minimum undergraduate level for registering

the course.

- Students who lack an official proof (such as undergraduate transcript) of the required academic background must acquire a written permission from the course instructor for registering the course.

Method of Assessment			
Evaluation and Grading	Term Project	Midterm Exam	Final Exam
Percentage	35 %	30 %	35 %

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.