

**School of Engineering and Natural Sciences / Computer Engineering (English)**

**2023 - 2024 Academic Year**

**COMPUTER ORGANIZATION**

**Syllabus**

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
COMPUTER ORGANIZATION	COE2233880	Spring Semester	3+2	4	8
<b>Prerequisites Courses</b>	SAYISAL DEVRE TASARIMI				
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Prof.Dr. Selim AKYOKUŞ				
<b>Name of Lecturer(s)</b>	Assist.Prof. Mustafa TÜRKBOYLARI				
<b>Assistant(s)</b>					
<b>Aim</b>	The objective of this course is to teach the organization and architecture of computer systems hardware, basics of the von Neumann machine, instruction set architectures, addressing modes, assembly programming, processor and control design, CISC and RISC architectures, computer arithmetic, memory systems, interconnection structures, I/O organization, secondary storage devices, performance issues, parallel processing and multicore computers, and graphic processing units. The laboratories for this course will focus on logical design of computer components, assembly programming and the design of a simple microprocessor and its components using a hardware description language.				
<b>Course Content</b>	This course contains; Overview: Provides an overview of computer organization and architecture and looks at how computer design has evolved.,Major components of a computer and their interconnections, both with each other and the outside world.,Detailed discussion of internal and external memory,Detailed discussion of input/output (I/O). ,Bilgisayar arithmetics, number systems,Digital logic,The internal architecture and organization of the processor. ,Pipelining,RISC architecture,Multiprocessors,Parallel processing,Project presentations,General-Purpose Graphic Processing Unit,Project presentations.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
Understand and follow the latest architectural and technological developments in the field of computer organization					
Ability to find, select and use modern tools and techniques required to design and implement computer hardware					
Ability to design basic computer hardware under realistic constraints and conditions using theoretical and applied knowledge in the field of computer organization					
To gain sufficient knowledge about computer organization					
<b>Teaching Methods</b>					
<b>Assessment Methods</b>					
<b>Lecture Schedule</b>					
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Overview: Provides an overview of computer organization and architecture and looks at how computer design has evolved.	Textbook chapter 1			
2	Major components of a computer and their interconnections, both with each other and the outside world.	Textbook chapter 2,3			
3	Detailed discussion of internal and external memory	Ders Kitabı Bölüm 6			
4	Detailed discussion of input/output (I/O).	Textbook chapter 7			
5	Bilgisayar arithmetics, number systems	Textbook chapter 9,10			
6	Digital logic	Textbook chapter 11			
7	The internal architecture and organization of the processor.	Textbook chapter 14			
8	Pipelining	Textbook chapter 19			
9	RISC architecture	Textbook chapter 14			
10	Multiprocessors	Textbook chapter 17			
11	Parallel processing	Textbook chapter 18			
12	Project presentations				
13	General-Purpose Graphic Processing Unit	Textbook chapter 19			
14	Project presentations				
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		30			
General Exam		70			

**Resources**

William Stallings Computer Organization and Architecture 9th Edition  
 Harris and Harris Digital Design and Architecture 2nd Edition