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

2022 - 2023 Academic Year

COMPUTER ORGANIZATION

Syllabus

Course Description						
Name		**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
COMPUTER ORGANIZATION		COE2233880	Spring Semester	3+2	4	8
Prerequisites Courses	SAYISAL DEVRE TASARIMI					
Recommended Elective Courses						
Language of Instruction	English					
Course Level	First Cycle (Bachelor's Degree)					
Course Type	Required					
Course Coordinator	Prof.Dr. Selim AKYOKUŞ					
Name of Lecturer(s)	Prof.Dr. Selim AKYOKUŞ					
Assistant(s)						
Aim	The objective of this course is to teach the organization and architecture of computer systems hardware, basics of the von Neumann machine, instruction set arhitectures, addresssing modes, assembly programming, processor and control design, CISC and RISC architectures, computer arithmetic, memory systems, interconection 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.					
Course Content	This course contains; Overview: Provides an overview of computer organization and architectureand looks at how computer design has evolved.,Major components of a computerand 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,Multiproccessors,Parallel processing,Project presentations,General-Purpose Graphic Processing Unit,Project presentations.					

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
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		

Teaching Methods	
Assessment Methods	

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	Overview: Provides an overview of computer organization and architectureand looks at how computer design has evolved.	
2	Major components of a computerand their interconnections, both with each other and the outside world.	
3	Detailed discussion of internal and external memory	
4	Detailed discussion of input/output (I/O).	
5	Bilgisayar arithmetics, number systems	
6	Digital logic	
7	The internal architecture and organization of the processor.	
8	Pipelining	
9	RISC architecture	
10	Multiproccessors	
11	Parallel processing	
12	Project presentations	
13	General-Purpose Graphic Processing Unit	
14	Project presentations	

Evaluation Methods	**Weight(%)**
Midterm Exam	30
General Exam	70

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