

ACIBADEM UNIVERSITY
Faculty of Engineering / Computer Engineering
2025 - 2026 / Fall Semester
(CSE 301) (Computer Architecture)

SYLLABUS

Course Name	Code	Semester	T+A Hour	Credit	ECTS
Computer Architecture	CSE 301	Fall 2025	3+0	3	6
Course Language	English				
Course Type	Undergraduate				
Course Coordinator	Barış Arslan				
Course Period					
Attendance	Mandatory				
Course Aims	<p>This course is an introduction to computer architecture and the factors influencing the design of the elements that make up modern computing systems. The objective is two-fold, first to provide a background on how computers are designed, and help students who are interested in computer systems, VLSI and microprocessor design to gain a perspective on the requirements of such systems. Second, to illustrate the effect of computer architecture on higher-level software, and help students understand the fundamental pros and cons of design decisions made at a low level.</p>				
Course Outputs	<p>After successful completion of the course, the student will:</p> <ul style="list-style-type: none"> • Understand how a processor works, including memory hierarchy • Understand the hardware/software interface (Assembly languages) • Understand the computer architectural techniques to improve the performance of the computers 				
Course Contents	Instruction Set Architectures, Computer Arithmetic, Processor Design, Memory Hierarchy and Caches				
Evaluation Criteria	Evaluation Components				
	Exam #1 (Midterm)		% 25		
	Assignments		% 25		
	Attendance & Participation		%10		

	Exam #2 (Final Exam)	% 40
--	-----------------------------	------

Week	Subject header
1	Introduction to Computer Architecture, Performance Measurement
2	Instruction Set Architectures, Arithmetic Instructions, Memory Access
3	Instruction Representations, Logical Operations, Equality Check
4	Conditional Operations, Examples
5	Exam #1 (Midterm) (Date: 20 October 2025, Monday, 11:00)
6	Procedure Calling, Processors: Data and Control Path, Pipelining
7	Pipeline Hazards: Structural Hazards, Data Hazards, Forwarding, Control Hazards
8	Memory Hierarchy, Principle of Locality, Direct Mapped Cache
9	Associative Caches, Replacement Policies
10	Exam #2 (Final Exam) (Date: 19 November 2025, Wednesday, 15:00)
11	No class
12	No class
13	No class
14	No class

References	
Main Textbook	Computer Organization and Design: The Hardware/Software Interface (MIPS edition) by Patterson and Hennessy, Morgan Kaufmann.