



Course Syllabus
Department
COMP 305 Computer Organization
Fall 2021

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Course days and hours: Monday 12:10-14:00 + 1 hour Async
Location: B209
Course Credit: 6 ECTS

Course Description:

Modern computer technology requires professionals of every computing specialty to understand both hardware and software. The interaction between hardware and software at a variety of levels also offers a framework for understanding the fundamentals of computing. In this course, the main emphasis is to show the relationship between hardware and software and to focus on the concepts that are the basis for current computers.

Required Textbook/s:

1. Computer Organization and Design RISC-V Edition: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design)
David A. Patterson; John L. Hennessy

Additional Resources:

1. Structured Computer Organization (International Edition) 6th (sixth) Edition by Tanenbaum, Andrew S, Austin, Todd published by Pearson (2012)
2. Computer Organization and Architecture, Design for Performance ninth edition William Stallings

Learning Objectives and Outcomes:

By the end of this course, students will be able:

- 1.To understanding the concepts in modern hardware.
- 2.To analyze and evaluate the performance of a computer
3. To understand how computer performance and energy efficiency can be improved via parallelism, pipelining, and prediction.

Teaching Methodology:

There will be weekly oral exams in addition to weekly quizzes. In the oral exam, the person answers the question properly will get 100 and will be exempted from the quiz. The person who cannot answer will get -10 points penalty fromn the quiz.

Learners will be provided with as much opportunities of hands-on practice as possible with the aim of striking a balance between learner-centeredness and sufficient guidance. Various forms of interaction (i.e. pair work and group work) will also be encouraged to cater for learners with different learning styles. Additionally, individuals will be expected to produce both in-class writings and homework assignments in addition to the reading tasks, which will encourage them to reflect and think critically. Technology will also be incorporated into the classroom procedures in order to create a better learning environment.

Grade Distribution: *Final grades are based on the following*

<u>Evaluation Criteria</u>	<u>Percentage</u>
Quizzes (in-class; every week)	40%
Homeworks (3 total)	30%
Midterm	20%
Final	25 %
1 Bonus HW	5%
	Total: 115% + 5%

Grading Scale:

A	4,00	90-100
A-	3,67	87-89
B+	3,33	83-86
B	3,00	80-82
B-	2,67	77-79
C+	2,33	73-76
C	2,00	70-72
C-	1,67	64-69
D+	1,33	56-63
D	1,00	50-55
F	0,00	0-49

For a detailed description of grading policy and scale, please refer to the website <https://goo.gl/HbPM2y> section 28.

Course Policies:

- For the AGU Make-up policy, please refer to the website <https://goo.gl/HbPM2y> section 26.
- You can eat/drink in the class as far as you keep the class clean and the food is not smelly.
- English should be used at all times to communicate with one another during instruction hours.
- Please, respect the allotted times provided for breaks.
- Please, bring the required materials, including textbooks and notebooks.
- Please be prepared, having read, written and studied the assigned lessons, articles, or passages;
- Please be ready to write assignments in class that will be graded; and most importantly work cooperatively with other students.

Attendance Policy:

- Be in the class on time (being late for class is an extreme annoyance to the entire class).
- Class attendance is strongly recommended. Regular class time will include informal assessment activities for which points will be assigned. Participation in these activities will help you prepare for exams and homework and also provide me with feedback on your progress.
- For a detailed description of AGU attendance policy, please refer to the website at <https://goo.gl/HbPM2y> section 25.

Email Policy:

When contacting the instructor, please use the Canvas email feature. Only use gulay.yalcin@agu.edu.tr if Canvas is not accessible (server down, etc). Include in the subject line the class number and name (COMP305 Computer Organization). If this information is not included, your email may not be answered. Any announcements or warnings will be send to your AGU e-mail. Therefore it is the responsibility of every student to read his/her AGU e-mails and CANVAS emails regularly. AGU webmail can be accessed through <https://mail.agu.edu.tr>

Cheating & Plagiarism:

You are responsible for knowing the University policies on cheating and plagiarism. Not giving credit to a person for their intellectual work and passing it off as your own is stealing.

Specifically:

- 1) Copying or allowing someone to copy your work on an exam, homework, or in class assignment is cheating.
- 2) Cutting and pasting material from the web or any other electronic source is plagiarism.
- 3) Copying and turning in the same assignment as someone else, from this class or from another class, is cheating. Unless explicitly told otherwise, you can discuss and problem- solve on homework together but the final product has to be your own – not just your own handwriting but your own way of explaining and organizing your ideas.
- 4) Making superficial changes (minor additions, deletions, word changes, tense changes, etc) to material obtained from another person, the web, a book, magazine, song, etc. and not citing the work, is plagiarism. The idea is the intellectual property, not the specific format in which it appears (e.g., you wouldn't reword Einstein's theory of relativity and imply that relativity was your own idea, would you?)
- 5) If you find material and it is exactly what you are trying to say, or you want to discuss someone's idea, give the person credit and cite it appropriately. Don't overuse citations and quotes: instructors want to know how you think and reason, not how some one else does.

If you have any questions or concerns about whether your behavior could be interpreted as plagiarism, please ask the assistants or me before you submit the work.

For a detailed description of AGU policies, please refer to the website at <https://goo.gl/FjLhzH>

Course Outline:

Week	Topic	Description, Assignments and Required Readings
1st	Introduction to Computer Organization	
2nd	Machine Level Programming	Assembly Programming HW
3rd	ISA Addressing Modes	
4th	Performance of the Computer- Single Cycle Machine	
5th	<i>RISC vs CISC - Pipeline Intro</i>	
6th	<i>Midterm</i>	
7th	Pipeline Hazards - Data dependency	
8th	<i>Pipeline Hazards - Control Dependency</i>	Performance Measurement PIN
9th	Exceptions	
10th	Pipeline Hazards (Cont)	Reading
11th	Memory Systems	
12th	Memory Systems (Cont)	
13th	Virtual Memory	
14th	Parallel Processors	Reading

Option 1: 3HWs 20% + 1 HW Bonus 5%