

# CSE213 MICROCONTROLLER PROGRAMMING

## 0.0 COURSE INFO

**Instructor** : Alper Bilge, PhD

**Time** : Thursdays 09.30-12.30

**Labs** : Wednesdays 15.30-17.30

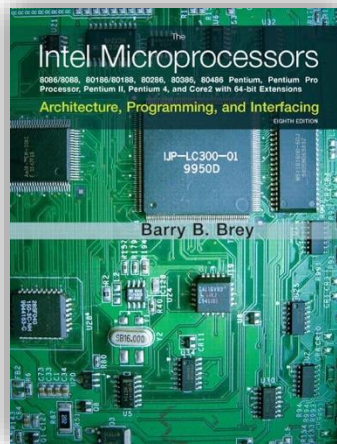
**Location** : Amfi 4 (courses)  
B102 / YLab1 (labs)

### Grading (tentative)

- 1 MT – 30%
- Labs – 30% (assessment via quiz)
- Final – 40%

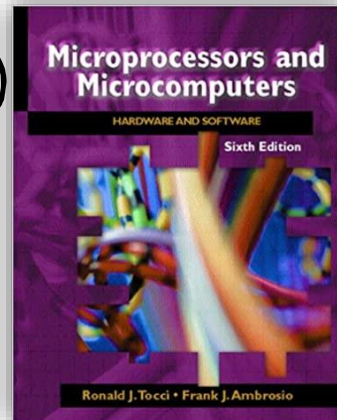
### Books

#### The Intel Microprocessors



Brey, B.B. "The Intel Microprocessors",  
Prentice Hall, 2009.

Official course textbook



Tocci, R.J. and Ambrosio, F.J.,  
"Microprocessors and Microcomputers",  
Prentice Hall, 2003.

Supplementary textbook

# Instructor Info

**Instructor** : Alper Bilge, Phd  
Associate Professor of Computer Science  
Akdeniz University, Computer Engineering Department

**E-mail** : [abilge@akdeniz.edu.tr](mailto:abilge@akdeniz.edu.tr)

**Office Hours** : No office hours, please reach on MS Teams.

# Course Schedule (tentative)

1. Introduction to the Microprocessor and Computer
2. The Microprocessor and Its Architecture
3. Addressing Modes
4. Data Movement Instructions
5. Arithmetic and Logic Instructions
6. Program Control Instructions
7. Memory Interface
8. I/O Interface
9. Interrupts
10. Floating Point Numbers
11. Microprocessor Performance

# Laboratory sessions



- Lab sessions will be handled in laboratory.
- Labs and project will be carried out by each student alone or in groups of 2.
- Target microprocessor platform for lab works is Intel 8086.
- 8086 Emulator will be employed for lab works.
- The emulator can be downloaded in MS Teams.
- You may install the emulator to your own computer as well.

# Learning outcomes --> At the end of this course, you will be able to

## 1. comprehend the structure of a microprocessor-based computer system

- 1.1. summarize the development progress of microprocessors.
- 1.2. express fundamental units within microprocessors.
- 1.3. define the relationship between the microprocessor, memory, and input-output units.
- 1.4. explain bus types and their functions.

## 2. explain Intel 8086 microprocessors architecture.

- 2.1. recognize Intel 8086 register types.
- 2.2. define the functions of the bus interface unit and execution unit within Intel 8086.
- 2.3. summarize the addressing modes of Intel 8086.
- 2.4. recognize Intel 8086 instruction set, memory interface, input-output interface, and interrupt features.

## 3. define the differences between high-level and low-level programming languages.

- 3.1. recognize common features of high-level programming languages.
- 3.2. recognize common features of low-level programming languages.
- 3.3. express the tools that are used in the conversion of codes written by high-level programming languages to machine language.
- 3.4. identify usage fields of high level and low-level programming languages.

## 4. develop a program using low-level programming language.

- 4.1. recognize the tools that are used for conversion of the codes developed by high-level programming languages to machine language
- 4.2. realize operations such as defining variables, forming loops, procedures, and subroutines in low-level programming language.
- 4.3. analyze an instruction set that is specific to a particular microprocessor.

# Academic Integrity Statement



1. All work in the classes must be your own work. **NO COPYING OR PLAGIARISM IS ALLOWED.** If such is detected, no credit for the exam or project will be given and appropriate actions for academic dishonesty will be taken.
2. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal.
3. *It is the ethical responsibility of students to identify the conceptual sources of work submitted. Failure to do so is dishonest and is the basis for a charge of cheating or plagiarism, which is subject to disciplinary action.*
4. Students are sometimes surprised at what we consider plagiarism.
  - It is plagiarism to use in a homework assignment any text from the instructor's notes and slides.
  - It is plagiarism to use in a homework assignment any text found on the Web.
  - It is plagiarism to use in a computer program any code you did not write.
5. A student may use the ideas expressed in the instructor's slides or in material found on the Web, but the ideas must be expressed in the student's own words, to demonstrate understanding of the topic. Students should cite information sources whenever using ideas or information discovered outside of class (e.g., on the Web or in the library). A student is less likely to be accused of plagiarism when information sources are cited.
6. Students are also prohibited from cooperating on homework assignments unless the instructor states explicitly that cooperating is allowed. Students are allowed to discuss homework assignments, but not to collaborate in solving problems, writing answers, or writing computer software. If two students are found to have cooperated on a homework assignment, both students are considered to have cheated. It does not matter which student did the original work and which student copied.
7. Plagiarism, copying, and other forms of cheating can result in immediate failure of the course.