<div style="border:1px solid black; padding:10px;">

EE443 Embedded Systems (3-0)
2022 Autumn, Wednesday 9.45-12.30

</div>

Course Coordinator :   Ergün GÖZEK

Gradings

Final Exam (written and oral)……………………….. 50 %
Quiz Score………………………………….……... 50 %

Weekly quizzes will be applied throughout the semester. There are 5 quizzes.
4 best quizzes out of 5 will be used for grading.
There will be a Final Examination at the end of the semester.

Students are expected to attend at least 70% of the lectures and problem sessions.

Contents
1) Introduction to Computing
      a. Numbering and Coding System.
      b. Logical Operations.
      c. Memory Organization of Computers
      d. Internal Block Diagram of a CPU
      e. Harvard and Von Neumann architectures
      f. Microcontrollers versus General Purpose Microprocessors

2) The Microcontrollers
      a. Microcontroller Architecture
      b. Introduction to Microcontroller Assembly Language
      c. Arithmetic and Logic Instructions
      d. Microcontroller Advanced Assembly Language Programming.
      e. Microcontroller Programming in C.

3) The Basic Microcontroller Programming Tools
      a. Microcontroller Digital Input Output Programming in Assembly and C
      b. Microcontroller Timer Programming in Assembly and C
      c. Microcontroller Interrupt Programming in Assembly and C
      d. Microcontroller ADC Programming in Assembly and C
      e. Microcontroller PWM Programming in Assembly and C
      f. Microcontroller I2C Programming in Assembly and C.
      g. Microcontroller UART Programming in Assembly and C.

4) Designing A Basic Temperature Control Circuit with Microcontroller.
      a. Choosing Design Tools.
      b. Choosing Microcontroller and Other Additional Sensors.
      c. Describing Physical and Programming Properties.
      d. Drawing PCB.
      e. Test and Finalize Project

Course Plan

Week	Tentative Content	Quiz
Week-1	Numbering and Coding System. Logical Operations. Memory Organization of Computers Internal Block Diagram of a CPU	
Week-2	Harvard and Von Neumann architectures Microcontrollers vs Microprocessors Introduction to Programming Tools.	
Week-3	Microcontroller Architecture Introduction to Microcontroller Assembly Language Arithmetic and Logic Instructions Microcontroller Advanced Assembly Language Programming. Microcontroller Programming in C.	
Week-4	Choosing Design Tools. Choosing Microcontroller. Describing Physical and Programming Properties. Learning PCB basics	Q1
Week-5	Introduction to Emulator Board. Microcontroller Digital Input Output Programming in Assembly and C. Drawing the related PCB.	
Week-6	7 Segment Control and Generate Interface Routines for Emulator. Drawing the related PCB.	Q2
Week-7	Microcontroller Timer Programming in Assembly and C. Drawing the related PCB.	
Week-8	Microcontroller Interrupt Programming in Assembly and C. Drawing the related PCB.	Q3
Week-9	Microcontroller ADC Programming in Assembly and C. Drawing the related PCB.	
Week-10	Microcontroller PWM Programming in Assembly and C. Drawing the related PCB.	Q4
Week-11	Microcontroller I2C Programming in Assembly and C. Drawing the related PCB.	
Week-12	Microcontroller UART Programming in Assembly and C. Drawing the related PCB.	Q5
Week-13	Final Project Implementation	
Week-14	Final Project Implementation	
Week-15	Final (written)	

Note: The instructor reserves the right to make changes to this syllabus as necessary.

ACADEMIC ETHICS

According to Personal Data Protection Law, sharing any kinds of lecture materials (lecture videos, handouts, homework/quiz/exam questions, etc.) with third parties, use them on the web, or publish them through any social network without written approval of our institution is strictly forbidden even after your graduation (https://uzem.iyte.edu.tr/en/duyuru/distancelearning-and-the-personal-data-protection-law).

All written submissions (homework assignments, exams, etc.) must reflect purely independent and individual efforts. All reference material (books, scientific papers, web sites, etc.) in these submissions should be properly cited. Academic dishonesty, including any form of cheating will not be tolerated and may result in failure of the course and/or formal disciplinary proceedings that may lead to suspension. Cheating includes but is not limited to such acts as offering or receiving unpermitted assistance in the exams, using any type of unauthorized written material during the exams, handing in any part or all of someone else's work as your own, copying from an internet source. Plagiarism is a specific form of cheating. It means using someone else's work without giving credit and it is a form of literary theft.