

İSTANBUL TEKNİK ÜNİVERSİTESİ
Fen Edebiyat Fakültesi - Fizik Mühendisliği Bölümü
(<https://www2.fizik.itu.edu.tr/turhan/asm/>)

FIZ 434E Microprocessors CRN 21089

2023-2024 Spring

Dr. İbrahim Türhan

Phone: (0212) 285 6963

E-mail: turhan@itu.edu.tr, turhan@gmail.com

Lecture : Monday 13:30 – 15:30 FEB L300

Laboratory : Monday 15:30 – 17:30

Office Hours :

Textbook:

Beginners Introduction to the Assembly Language of ATMEL-AVR-Microprocessors

Atmel AVR Microcontroller Primer: Programming and Interfacing, ISBN: 9781598295429

Atmel AVR (ATtiny2313) Programlama, Abdurrahman Taşbaşı ISBN 9789758834242

AVR An Introductory Course, John Morton, ISBN: 0 7506 56352

Mikroişlemciler, mikrobilgisayarlar, Eşref Adalı, Birsen Yayınevi



Course Outline

Week		Topic
1	12 February 2024	Microcontroller Basics and Programming Concepts
2	19 February 2024	Microcontroller Instruction Sets and Assembler
3	26 February 2024	Hardware and Software setup and Assembler Coding - Memory and Registers
4	4 March 2024	Assembler Coding (2) – Stack and Sub Functions, I/O Ports
5	11 March 2024	Assembler Coding (3) – Bit Manipulating, Loop Cycle Calculation
6	18 March 2024	Assembler Coding (4) – Timer Execution
7	25 March 2024	Midterm I
8	1 April 2024	I/O and 1602 LCD, Sequence control and Step Motor
	8 April 2024	Semester Break
9	15 April 2024	Timer and PWM (Pulse width Modulation) and Servo Motor
10	22 April 2024	Timer and PWM (Pulse width Modulation) and Servo Motor
11	29 April 2024	Midterm II
12	6 May 2024	Serial Communication (SPI, I2C, 1-wire)
13	13 May 2024	Serial Communication (SPI, I2C, 1-wire)
14	20 May 2024	Advanced coding – Mixing C and asm, Introduction to PID Control

Quizzes/LAB : 5 Oral or written quiz.

Homework : 5 homework to compensate the laboratory before or after the laboratory session.

Laboratory : Consist of 8 projects that may be varied or extended during the laboratory session.

Date

Midterm : 25 March, 2024

Midterm : 29 April, 2024

Final Exam : 2024 (Exact date and time will be announced by the Student Administration Office.)

Grading:

Quizzes (5) : 5%

Lab (5-10) : 15%

Midterms (2) : 40%

Final Exam (1): 40%

Final Exam requirement: Minimum a 30% out of 60% (MT, HW, Quiz) is required to attend the Final Exam. Students that are not able get the minimum requirement will receive 'VF'.

Academic Integrity

Students who cheat during an exam or on laboratory session will receive a grade of FF in the course.