Sabancı University
Faculty of Engineering and Natural Sciences
EE 312 - Discrete Time Signals and Systems
Spring 2021
Course Information

Lecturer	: Hüseyin Özkan, `huseyin.ozan@sabanciuniv.edu` Room: FENS 1107, Phone: x9594.
Teaching Assistants	Ali Enver Bilecen (`bilecen@sabanciuniv.edu`)
Textbook	: Digital Signal Processing (e-book), A computer based approach 4th edition, Sanjit K. Mitra, McGraw Hill, 2011 **(required)**. Discrete-Time Signal Processing, 3rd edition, Oppenheim, Schafer, 2009. **(reference)**.
Lecture Hours	: Wednesday 14:40-16:30, Thursday 08:40-09:30 (online zoom session)
Recitation Hours	: Friday 08:40-10:30 (online zoom session)
Office Hours	: Hüseyin Özkan: By appointment, please drop an email to arrange one. Ali Enver Bilecen: Friday 10:40-12:00 (online zoom session)
Course Objectives	: To provide students fundamentals of signal processing in discrete-time and enable them to develop the background for graduate level studies such as adaptive filtering. To provide students knowledge of algorithm design, implementation and analysis through comprehensive experiments/simulations in MATLAB during laboratory sessions.
Prerequisite	: ENS 211 - Signals
Grading Policy	: Midterm 1, 20%; Midterm 2, 20%; Final, 25%; Quizzes, 10%; Problem Sets, 10%; Labs, 15%

Topics (without counting the spring break):

- Signals and Signal Processing, Discrete-Time Signals in Time Domain [**2 weeks**]

- Discrete-Time Signals in Frequency Domain [**2 weeks**]

- Discrete-Time Systems [**1 week**] — **Midterm 1**

- Finite-Length Discrete Transforms [**2 weeks**]

- z-Transform [**1 week**]

- LTI Discrete-Time Systems in Transform Domain [**1 week**]

- Digital Filter Structures [**1 week**] — **Midterm 2**

- IIR Digital Filter Design [**1 week**]

- FIR Digital Filter Design [**1 week**]

- Fast Fourier Transform [**1 week**] — **Final**

Exams

There will be two midterms and a final. All the exams will be closed-book and closed-notes; and also no electronics devices. Midterm 1/Midterm 2 will be held around the 6th/11th week (without counting the spring break).

Quizzes

Random pop-up quizzes will be given during lectures. Note that 50% of the total achievable score in a quiz will measure the readiness/attention, and the remaining 50% will be granted regardless of the response due to attendance. A student who misses a quiz will get 0.

Laboratories/Recitations

There will be 9 recitations and 5 laboratories. All of them will be held on Fridays at 08:40-10:30. **Recitation sessions** will focus on applications of the concepts introduced in lectures to problem solving, whereas the **laboratory sessions** will focus on computer-aided demonstrations. In each lab, you will be assigned a MATLAB exercise and required to submit a lab report within a week after the session. If you miss a laboratory session without a valid reason, you will lose half of your grade for the corresponding report. Submissions within three days after the 1-week-deadline will be accepted with 10% penalty. No late submission beyond this.

Problem Sets

There will be (roughly) 5 homework assignments. You are allowed and actually encouraged to discuss with your friends on the assigned problems. However, of course, you must prepare your submission independently and certainly not report anything beyond your understanding! Submissions within three days after the announced deadline will be accepted with 10% penalty. No late submission beyond this.

Make-up Policy

There will only be one make-up exam at the end of the semester. Only health or other personal emergencies will be accepted as valid reasons to qualify you for a make-up exam. The make-up exam will cover the entire course material!

SUCourse+

We will use SUCourse+ to distribute problem sets and their solutions, and as a communication medium between you and the staff. If you have any problems accessing the course material on SUCourse+, please let us know as soon as possible so we can have such problems fixed.

Important note: Anything posted on SUCourse+ is assumed to be immediately known by everyone in the class!