Aydın Adnan Menderes University
Electrical and Electronics Engineering Department
EE 303 – SIGNALS & SYTEMS (2026-2027 Fall)

Instructor

Prof. Dr. Yılmaz KALKAN

Schedule

Monday 13:30 - 16:15 (**@ MA206**)

Office Hours

Wednesday 09:30-12:00, Office: C-326 **(!!!!! No office hours in exam weeks.)**
If you cannot come to my office, you can reach me with e-mail whenever you need via yilmaz.kalkan@adu.edu.tr

Textbook

1. Signals and Systems, Alan V. Oppenheim, Alan S. Willsky, and S. Hamid Nawab, 2nd Edition, Pearson New International Edition, 2014.

Reference Books

1. Signals and Systems - Continuous and Discrete, R.F. Ziemer, W.H. Tranter, and D.R. Fannin, 4th Edition. Prentice Hall, 1998.

Grading

Midterm	: 35%
Final	: 50%
Quizes	: 15%
Bonus	: + 10%

Grade	Letter	Grade	Letter	Important Dates (~approximately)
95 – 100	A1	65 – 69	C1	
90 – 94	A2	60 – 64	C2	Midterm: In MT week (announced later)
85 – 89	A3	55 – 59	C3	
80 – 84	B1	50 – 54	D1	
75 – 79	B2	0 – 49	F1	Final: In Final weeks 11-24,Jan. 2027
70 – 74	B3	Irregular	F2	

- For midterms and final exams, scores **(which greater than or equal to 50)** will be multiplied with a constant multiplication factor (μ) where **μ=100/(maximum score in that exam.) and μ=1.3 (max)**
- Final score must be greater than or equal to 50 (without scaling) **to pass this course**

Course Outline

I. Signals & Systems (Chapter 1 of Oppenheim - 6 Hrs.)

Introduction, Continuous-Time and Discrete-Time Signals, Periodicity, Even and Odd Signals, Exponential and Sinusoidal Signals, the Unit Impulse and Unit Step Functions, Continuous-Time and Discrete-Time Systems, Basic System Properties (Memory, Invertibility, Causality, Stability, Time Invariance, Linearity)

II. Linear Time-Invariant (LTI) Systems (Chapter 2 of Oppenheim - 6 Hrs.)

Discrete-Time LTI Systems, Convolution, Continuous-Time LTI Systems, Properties of LTI Systems, LTI Systems with and without Memory, Invertibility of LTI Systems, Causality for LTI Systems, Stability for LTI Systems, Unit Step Response of an LTI System, Causal LTI Systems Described by Differential and Difference Equations, Linear Constant-Coefficient Differential Equations, Singularity Functions

III. Fourier Series (Chapter 3 of Oppenheim - 6 Hrs.)

Fourier Series Representation of CT Periodic Signals, Convergence of Fourier Series, Gibs Phenomenon, Properties of CT Fourier Series, Fourier Series Representation of DT Periodic Signals, Properties of DT Fourier Series, Fourier Series and LTI Systems

IV. CT Fourier Transform (Chapter 4 of Oppenheim - 6 Hrs.)

Representation of Aperiodic CT Signals, Convergence of CT Fourier Transforms, Fourier Transform for Periodic Signals, Properties of CT Fourier Transform, Convolution Property, Systems Characterized by Linear Constant-Coefficient Differential Equations

V. DT Fourier Transform (Chapter 5 of Oppenheim - 6 Hrs.)

Representation of Aperiodic DT Signals, Convergence of DT Fourier Transforms, Fourier Transform for Periodic Signals, Properties of DT Fourier Transform, Convolution Property, Systems Characterized by Linear Constant-Coefficient Differential Equations

VI. The Laplace Transform (Chapter 9 of Oppenheim - 6 Hrs.)

Introduction, The Region of Convergence for Laplace Transforms, The Inverse Laplace Transform, Pole-Zero Plot, First-Order and Second-Order Systems, Properties of the Laplace Transform, Analysis and Characterization of LTI Systems Using the Laplace Transform, The Unilateral Laplace Transform

VII. The Z-Transform (Chapter 10 of Oppenheim - 6 Hrs.)

Introduction, The Region of Convergence for the Z-Transforms, The Inverse Z-Transform, Pole-Zero Plot, First-Order and Second-Order Systems, Properties of the Z-Transform, Analysis and Characterization of LTI Systems Using the Z-Transform, The Unilateral Z-Transform

Homeworks

Usually there will be homework for each 2-3 weeks (totally 4-5 homeworks). Homeworks will be theoretical and will include the important outcomes of those weeks. Moreover, they give idea about the exams. The process of actively struggling with an assignment is one of the most important educational experiences that you will have in this course. Your main incentive for consistently doing the assignments should be to enhance your comprehension of the material. It is beneficiary for the student to put some individual work on these. They will be a good preparation for your exams.

Quizzes

Quizzes will be arranged either at the **beginning of some lectures** to cover the previous items or **just after a lecture** to cover the learnt outcomes of that lecture. Duration of a typical quiz will be **5-10 minutes** and include only **one question**. There will be no pre-announcement in general but some quizzes can be announced. Missed quizzes will be graded as zero and there will be no make-up for that quizzes. Any excuse won't be evaluated. Total of 7-8 quizzes will be given during the semester and highest 5 of them will be taken into account.

Expectations

We expect you to make an honest effort to do quizzes and exams and also to submit on time. Also we expect that the work you submit to us under your name is yours. Interactions of students on the problems are useful and are encouraged, but each person should work on his/her solution. Copying from others is immature, dishonest and waste of everyone's time. **Attendance is mandatory**. A Student has to attend 60% of the lectures in a semester (8 weeks / 8 signs). Otherwise, He/She fails and it is not permitted to enter the final examination.

"Bir öğretim üyesinin güvenini kaybetmetense, not kaybetmeyi tercih edin ve kopya çekmeyin." Prefer to lose grade but do not loose reliance of any instructor, DO NOT CHEAT.

Social Bonus (extra +10%)

To award **social development of the students** (which is important for today's engineers), social activities (Reading book, playing a musical instrument, doing sport regularly, and going to cinema or theatre etc.) will be graded as bonus. This bonus grade (being extra +10%) will be added directly the overall score of the student at the end of the term. **Bonus point is at most 100 points** and includes the following activities.

- **Reading book:**
  - Reading any classical book (eg. Tolstoy, Steinbeck, J. Verne, Yaşar Kemal…)---- 10 points
  - Reading any kind of book except classical ones ----- 5 points
  - Reading "**Nutuk**" ------25 points
- **Playing a musical instrument** ------40 points for each instrument
- **Doing sports regularly** ------20 points for each sport
- **Going to cinema or theatre** ------10 (20) points for each cinema (theatre)
- **ADU IEEE Membership** ------- 20 points
- Other social activities (camping, dancing etc.) may be evaluated with student's declaration.

For evaluation of social activities, the student's declaration is enough. You need to write your activities in a word file with detailed information and send to me at the end of semester. Presentations in the classroom may be supported ☺