Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Electrical-Electronics Engineering Department
2023-2024 Spring Semester

Syllabus

Code/Name	SEC 302.1 / Signals and Systems II
Type	Required
Credit/ECTS	6/6
Hour per Week	3(3+0+0)
Level/Year	Undergraduate/3
Semester	Spring
Classroom	WWF | A103
Content	The Concept of Frequency in Continuous-time and Discrete-time Signals, Complex Exponential Signals and Harmonically Related Complex Exponentials, Frequency Analysis of Continuous-Time and Discrete-Time Signals, Fourier Series, Fourier Transform, Discrete-Time Fourier Transform and Discrete Fourier Series, Analysis and Synthesis Equations, Power and Energy Spectrum Density, Fourier Transform Theorems and Properties, Frequency-Domain Characteristics of Linear Time-Invariant Systems, The Discrete Fourier Transform (DFT).
Prerequisites	EEE 301
Textbooks	***Primary*** Class Notes JG Proakis, DG Manolakis, Digital Signal Processing-Principles, Algorithms and Applications, Prentice Hall, 3th Ed., 1996. ***Supplementary*** SW Smith, The Scientist and Engineer's Guide to Digital Signal Processing, California Technical Publishing, 2nd Ed., 1999.
Objectives	• To comprehend basic system properties and signals • To apply transform techniques to signals and systems • To analyze LTI systems by transform techniques • To analyze engineering problems by using properties of transform techniques
Course Outcomes	In this course you will be able to: CO1 identify and operate on basic signals in continuous time (CT) and discrete time (DT). CO2 compute the Fourier series representation of a periodic CT signal; determine the Fourier Transform (FT) of a CT signal; represent a periodic DT signal through Fourier series; find the Fourier Transform (FT) of a DT signal; use and relate the properties of DT/CT Fourier series and transforms. CO3 apply transform techniques to signals and systems CO4 analyze LTI systems by transform techniques. CO5 analyze engineering problems by using properties of transform techniques.

Weekly Schedule of Topics

W	Topic
1	The Concept of Frequency in Continuous-time and Discrete-time Signals
2	Complex Exponential Signals and Harmonically Related Complex Exponentials
3	Analysis of Continuous-Time and Discrete-Time Signals, Fourier Series
4	Fourier Transform
5	Discrete-Time Fourier Transform

6	Discrete Fourier Series
7	Analysis and Synthesis Equations
8	Casual Linear Time-Invariant Systems
9	Power and Energy Spectrum Density
10	Fourier Transform Theorems and Properties
11	Frequency-Domain Characteristics of Linear Time-Invariant Systems
12	The Discrete Fourier Transform (DFT).
13	Properties DFT
14	Analysis of Linear Time-Invariant Systems in the Frequency-Domain

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	5	4	2	2	1	5	0	3	3	3	0
CO2	5	5	1	4	2	3	4	2	4	3	0
CO3	4	5	3	4	2	5	1	3	2	3	1
CO4	4	4	2	5	1	4	2	2	1	4	0
CO5	5	4	4	4	1	5	4	3	4	1	2

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Course Policy

- Be in the class on time.
- English should always be used to communicate with one another.
- At least 70% attendance is required, otherwise a grade of **DZ** will be assigned.
- You must be present in class for the exercises and solve problems.

Cheating & Plagiarism

- Copying or letting someone copy your work on exams, assignments, or reports is cheating.
- Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism.
- The consequence of academic dishonesty is to receive a grade of **FF** for the course.

Evaluation

Exercises	10%
Midterm	30%
Final Exam	60%
Total	100%

Instructor

Name/Surname	Emrah Irmak	Email	emrah.irmak@alanya.edu.tr
Room	228	Office Hours	Tu 10.30-11.30 | F 15.30-17.30

Prepared by Emrah Irmak on June 7th, 2024.