

EE306 – Introduction to Radio Frequency (RF) and Microwave Design

Sabanci University, 2022-2023 Spring

Disclaimer: We may have to revise the course plan according to the countrywide reassessment regarding higher education, and this is expected to happen at the beginning of April. The course delivery method, the number and dates of exams, and other details are subject to change. Note that we are not going to sacrifice the content.

Instructor: Korkut Kaan Tokgoz, korkut.tokgoz@sabanciuniv.edu
Office Hours: Online or face-to-face: Communicate first with e-mail (Office: FENS1064)
Teaching Assistant: Tahsin Alper Ozkan, talper@sabanciuniv.edu
Grading Policy: Homework 20%, Midterm 10%, Projects 35%, Final 35%

The midterm will be around mid to late April.

Lectures: Tuesdays 11:40-12:30 FENS L030

<https://sabanciuniv.zoom.us/j/92246121543?pwd=a3Y3S2RCcFY2VWRRcnNDYVpVMXhrZz09>

Thursdays 14:40-16:30 FENS L058

<https://sabanciuniv.zoom.us/j/93484093470?pwd=dzRjYzlhK1c2R21XR25PNFFZZ1lQZz09>

Recitations: Online: Fridays 10:40-12:30

<https://sabanciuniv.zoom.us/j/6997463376>

Tentative Outline:

Week	Topic	Ludwig&Bretchko	Pozar
#1	Introduction	Ch. 1.1-1.5	Ch. 1.1-1.4
#2-4	Transmission Lines	Ch. 2.1-2.3, 2.6-2.11	Ch. 2.1, 2.3-2.8 Ch. 3.5, 3.7, 3.8, 3.10
#5-7	Smith Chart and Matching Networks	Ch. 3.1-3.4 Ch. 8.1-8.2	Ch. 2.4 Ch. 5.1-5.5
#8-9	Two-Port Networks and S-Parameters	Ch. 4.1-4.4	Ch. 4.2-4.6
#10-12	Amplifier Design Stability	Ch. 9.1-9.5, 9.7	Ch. 12.1-12.5
#13	Dividers and Couplers	App. G	Ch. 7.1-7.3, 7.5-7.8
*If time permits	Noise and Distortion	App. H	Ch. 10.1-10.4

Projects: Hands-on projects, including implementation and measurements. During Recitations, you will learn about these and some simulation tools and practice some course content.

1. Quarter-wave transformer (around the midterm)
2. Transistor amplifier working around 1-GHz (towards the end of the term)

Recommended Textbooks: Note that these are recommended, not strictly followed.

1. RF Circuit Design, Theory and Applications by R. Ludwig & P. Bretchko.
2. Microwave Engineering by David M. Pozar.