ECE 453 FALL 2024

Wireless Communication Systems

Instructor
José Schutt-Ainé - 5042 ECEB (jesa@illinois.edu)

Class Time
9 am-9:50 am, MWF, ECEB 3013 & ONLINE

Lab Time
AB1: Tuesday 9:00 – 11:50 am
AB2: Tuesday 2:30 – 5:20 pm
AB3: Thursday –9:00 – 11:50 am

Teaching Assistant
Juhitha Konduru (juhitha2@illinois.edu)
TBD

Textbook
Steven J. Franke, *Wireless Communication Systems,* Class Notes.

Course Web Page
The course web page is at **http://courses.engr.illinois.edu/ece453**. This is the primary means of staff-student communication outside of lecture hours.

Grading Policy

Homework	15% of total
Midterm Exams	30% of total
Lab	25% of total
Final Exam	30% of total

Homework Policy
Homework will be due on Fridays. Homework must be uploaded on Canvas by 5 pm. Late homework will not be accepted. Homework solutions will be posted on the class web page on the day after the due date.

Office Hours
Wednesdays, 3-4PM - ONLINE.
Questions regarding labs or homework should be posted on Piazza.

Midterm Exams
Midterm Exam 1: Monday, October 7, 9:00 – 9:50 am
Midterm Exam 3: Friday, November 8, 9:00 – 9:50 am

Final Exam
Monday, December 16, 8:00–11:00 AM

Syllabus for ECE 453 Fall 2024 (Prof. Jose Schutt-Aine)

Lec.	Day	Date	Topic	HW	Labs
1	M	8/26/24	Fourier Analysis		0
2	W	8/28/24	Modulation Theorem		
3	F	8/30/24	DSB Modulation and Demodulation		
	M	**9/2/24**	**LABOR DAY - NO CLASS**		
4	W	9/4/24	Nonlinear Modulation		
5	F	9/6/24	Quadrature Modulation/Demodulation		
6	M	9/9/24	Regenerative Receivers		
7	W	9/11/24	Superheterodyne Receivers		
8	F	9/13/24	AM Broadcasting	1	
9	M	9/16/24	FM Broadcasting		1
10	W	9/18/24	Up- and down-conversion		
11	F	9/20/24	Software Defined Radio	2	
12	M	9/23/23	Resonance		2
13	W	9/25/23	Quality Factor Q		
14	F	9/27/23	Oscillator Analysis	3	
15	M	9/30/23	Colpitt, Crystal, Voltage Controlled Oscillators		2
16	W	10/2/23	Oscillator Phase Noise		
17	F	10/4/23	Network Power Transfer	4	
	M	**10/7/23**	**Exam 1**		3
18	W	10/9/24	Lossless Matching Networks		
19	F	10/10/24	Impedance Matching with Lossless L-Networks	5	
20	M	10/14/24	Three-element matching networks		4
21	W	10/16/24	Pi and T matching networks		
22	F	10/18/24	Y, Z, H, ABCD Parameters	6	
23	M	10/21/24	S Parameters		5
24	W	10/23/24	Application of S parameters		
25	F	10/25/24	Stability Analysis	7	
26	M	10/28/24	Unconditional stability		5
27	W	10/30/24	Simultaneous Conjugate Match	8	
28	F	11/1/24	LTI networks		
29	M	11/4/24	Properties of LTI Networks		6
30	W	11/6/24	1-Port Noise Characterization	9	
	F	**11/8/24**	**Exam 2**		
31	M	11/11/24	2-Port Noise Characterization		7
32	W	11/13/24	Noise Factor and Noise Figure	10	
33	F	11/15/24	Mixers		
34	M	11/18/24	Conversion Loss in Mixers		8
35	W	11/20/24	Two-tone input	11	
36	F	11/22/24	Modeling Nonlinearities		
	M	**11/25/24**	**Thanksgiving Week – NO CLASS**		
	W	**11/27/24**	**Thanksgiving Week – NO CLASS**		
	F	**11/29/24**	**Thanksgiving Week – NO CLASS**		
37	M	12/2/24	Phase-Locked Loops		9
38	W	12/4/24	Transient Response of PLL's	12	
39	F	12/6/24	FM Demodulation		
40	M	12/9/24	Frequency Synthesis with PLL's		
41	W	12/11/24	Applications of PLL's		
	M	**12/16/24**	**Final Exam**		