

## ECE 451 SPRING 2023

<b>Section</b>	<b>Time</b>	<b>Instructor</b>	<b>Room</b>
X	12:00 MW	J. Schutt-Aine	3015 ECEB

### **Instructor**

Jose Schutt-Aine, 5042 ECEB, [jesa@illinois.edu](mailto:jesa@illinois.edu)

### **Book**

M. Steer, *Microwave and RF Design*, 2<sup>nd</sup> Edition, SciTech Publishing, 2013.

### **Notes**

Lab notes can be downloaded from course web site at: <http://emlab.illinois.edu/ece451/labs.html>

Class notes can be downloaded from course web site at: <http://emlab.illinois.edu/ece451/notes>

### **Grading Policy**

Lab	35% of total
Homework and Quizzes	20% of total
Midterm	10% of total
Lab Final	15% of total
Final	20% of total

### **Lab Reports Policy**

Instructions for preparing and returning lab reports will be given and are described in the Introduction for the Laboratory Notes.

### **Homework**

Homework assignments will be given throughout the semester. Assignments will be passed on a Wednesday and will be due two weeks later and should be uploaded into Canvas.

### **Midterm Exam**

Wednesday, March 8, 12:00 – 12:50 pm, 3015 ECEB

### **Laboratory Instructors (Lab 5076 ECEB)**

Juhitha Konduru - [juhitha2@illinois.edu](mailto:juhitha2@illinois.edu)

Bob Shi - [bobishi2@illinois.edu](mailto:bobishi2@illinois.edu)

### **Course Web Site**

<http://emlab.illinois.edu/ece451>

## ECE 451 SCHEDULE: SPRING 2023

Lec	Mo	Date	Topic	Ch	Lab(Tuesday & Thursday)
1	JAN	W-18	RF Detection	5	
<b>2</b>		<b>F-20</b>	<b>Transmission Lines</b>	<b>5</b>	
3		M-23	Smith Chart	6	
4		W-25	Applications of Smith Chart	5	
<b>5</b>		<b>F-27</b>	<b>Waveguides</b>	<b>6</b>	
6		M-30	Scattering Parameters	9	Lab 1 – Detection of RF Power - Benchview
7	FEB	W-1	Scattering Parameters of TL	9	
<b>8</b>		<b>F-3</b>	<b>Flow Graph</b>	<b>10</b>	
9		M-6	Error Models		Lab 2 – Slotted line
10		W-8	ABCD Parameters		
11		M-13	TRL Calibration Method		Lab 3 – Automated Scalar Reflectometry
12		W-15	Application of TRL		
13		M-20	Time-Domain Reflectometry		Lab 4 – Network Analyzer Error Correction
14		W-22	TL Characterization		
15		M-27	TL Characterization		Lab 5 – PNA and TDR
16	MAR	W-1	Frequency Dependence of TL		
17		M-6	Requirements of Channels		Lab 6 – Extraction of TL Parameters
		<b>W-8</b>	<b>MIDTERM EXAM</b>		
		<b>M-13</b>	<b>SPRING BREAK</b>		
18		M-20	On-chip Measurements		Lab 7 – Wafer Tests and Eye Diagrams
19		W-22	Eye Diagram Measurements		
20		M-27	Macro-Modeling		Lab 8 – TRL Calibration
21		W-29	Circuit Synthesis		
22	APR	M-3	Linear Amplifiers		Lab 9 – Advanced Techniques
23		W-5	Gain Compression		
24		M-10	Power Amplifiers	19	Lab 10 – Amplifier Measurements
25		W-12	Power Amplifiers		
26		M-17	X-Parameters		Lab 11 – Generating X Parameters via Simulation
27		W-19	X-Parameters		
28		M-24	X-Parameters		Lab 12 – Measuring X Parameters
29		W-26	Signal Integrity		
30	MAY	M-1	Signal Integrity		
		<b>W-3</b>	<b>Final Exam</b>		