

Syllabus
EE67024 Communications Circuit Design
 Prerequisite: EE342 or equivalent
 Class: 12:30 – 1:45 TR

Fall 2005
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 CRN 16845

Goals: This course teaches the fundamentals of radio frequency (RF) integrated circuit design for wireless communications. Students will learn the principles of heterodyning, feedback, and noise, and design techniques for low noise and high power amplifiers, mixers, oscillators, synthesizers, and phase-locked loops. An aim of this course is to develop an understanding of the physical and technological limits which dictate the performance of wireless systems.

Textbook: The Design of CMOS Radio-Frequency Integrated Circuits, 2nd edition
 T. H. Lee, Cambridge University Press 2003.

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#	Date	Topic	Chapter	Homework Due
1	23-Aug	Radio	1-2	
2	25-Aug	Passive RLC networks	3	
3	30-Aug	Characteristics of passive components	4	
4	1-Sep	MOS transistor characteristics	5	1
5	6-Sep	Distributed systems	6	
6	8-Sep	Smith chart and S-parameters	7	2
7	13-Sep	Bandwidth estimation	8	
8	15-Sep	High-frequency amplifiers	9	3
9	20-Sep	Voltage references	10	
10	22-Sep	Noise	11	4
11	27-Sep	Low noise amplifier design	12	
12	29-Sep	Spurious free dynamic range	12	5
13	4-Oct	Mixers	13	
14	6-Oct	Subsampling mixers	13	6
15	11-Oct	Midterm EXAM		
16	13-Oct	Special topic		
	18-Oct	Midsemester break		
	20-Oct	Midsemester break		
17	25-Oct	RF power amplifiers	15	
18	27-Oct	Amplifier A to F	15	
19	1-Nov	Design examples	15	
20	3-Nov	Phase-locked loops	16	7
21	8-Nov	Loop filters and charge pumps	16	
22	10-Nov	Oscillators and synthesizers	17	8
23	15-Nov	Negative resistance oscillators	17	
24	17-Nov	Phase noise	18	9
25	22-Nov	Circuit examples	18	
26	24-Nov	Thanksgiving holiday		
27	29-Nov	Transmitter architectures	19	10
29	1-Dec	Wireless sensor networks	19	
	6-Dec	Wrap-up and review		
		Final exam		