Advanced RF Integrated Circuits

ECE 7022

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Advanced topics on RF and mm-wave circuits. Frequency synthesizers, transmitter linearization techniques (e.g. polar circuits), MIMO and phase array circuits, power D/As.

Prerequisites and Co-requisites:
Prereq: 5022 (620), or Grad standing in Engineering, Biological Sciences, or Math and Physical Sciences.

Course Goals / Objectives:
- Learn principles of Integer and Frac-N Frequency Synthesizers
- Learn beamforming techniques such as MIMO and phase array circuits
- Learn concepts of power D/As for ultra wideband transmission circuits (e.g. Software Definer Radio)
- Power amplifier linearization concepts

Course Topics:
- Frequency synthesizers (phase detectors, charge pumps, multi-modulus dividers and voltage controlled oscillators, integer and frac-N synthesizers)
- All-digital phase lock loops
- Direct Digital Frequency Synthesis (DDS)
- Software defined transmitters and power D/As
- Transmitter linearization techniques
- Beamforming circuits
Designation:
Elective