



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
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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
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Designation:

Elective