



## EE421-Communication Electronics (Elective Course)

**Code and Name:** EE421 Communication Electronics

**Credit Hours:** 3 (Lecture: 3, Tutorial: 1)

**Textbook:**

- Electronic Communication Techniques, Paul H. Young, Fifth Edition, Pearson/Prentice Hall, 2004.

**Other References:**

- L. E. Frenzel Jr., Principles of Electronic Communication Systems, 4<sup>th</sup> Edition, McGraw-Hill Education, 2015.
- C.L. Wadhwa, Network Analysis and Synthesis, New Age International Pvt Ltd, 2006.
- R. Sobot, Wireless Communication Electronics Introduction to RF Circuits and Design Techniques, Springer, 2012.

**Course Description:**

Passive circuits and attenuators, Large-signal analysis, RF power amplifiers, Tuned amplifiers, RF oscillators and Mixers, Design of S/H circuits, Transmitter circuits and, Receiver circuits, A/D and D/A converters, Timing (clock generator) circuits, Circuits design using PLL, VCO and multipliers.

**Pre-requisites:** EE321.

**Co-requisites:** None.

**Course Learning Outcomes:**

With relation to ABET Student Outcomes (SOs: 1-7)

1. Apply attenuator circuits in communication electronics. (1)
2. Apply RF power amplifiers and tuned amplifiers in communications. (1)
3. Identify RF oscillator and mixers functions in communication. (1)
4. Identify transmitter and receiver circuit components, types, and their functions. (1)
5. Design A/D and D/A converters and S/H circuit. (2)
6. Use Phase Locked Loop for stable VCO, frequency synthesizer and PLL modulator. (6)

**Topics to be covered:**

- Introduction and Passive circuits and attenuators.
- Large-signal analysis, RF power amplifiers.
- Tuned amplifiers, RF oscillators and Mixers.
- Timing (clock generator) circuits, Design of S/H circuits, and A/D and D/A converters.
- Transmitter circuits and, Receiver circuits.
- Circuits design using PLL.
- VCO and multipliers.

**Grading Policy:**

The grading for the course are 60% coursework and 40% Final Exam. The coursework consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

