EE 442L

1. **Course Number & Name:** EE 442L, Analog and Digital Communications Lab
2. **Course Credit and Contact hours:** 1 Unit, 3 hours Lab
3. **Course Coordinator:** Dr. Donald Estreich
5. **Supplemental Materials:** Lab instructions, slides, and handouts.
6. **Specific Course Information:**
   a. **Description:** Laboratory work covers various analog and digital communication elements, and modulation, and demodulation techniques.
   b. **Prerequisites:** EE 230 and EE 400, or with consent of instructor
   c. **Co-Requisite:** EE 442 Lecture, or with consent of instructor
   d. **Status:** ☑ Required for EE program, ☐ Elective, ☐ Selected Elective
7. **Specific Goals for the Course:**
   a. **Specific outcomes of instruction:** Upon successful completion of this course the students will gain:
      i. Ability to understand the difference between analog and digital systems, their respective advantages and disadvantages.
      ii. Ability to apply signal and system analytical tools in both the time and frequency domains.
      iii. Ability to develop critical thinking skills by analyzing communication systems.
      iv. Ability to study signal and linear time invariant system properties.
      v. Ability to study, design, and build amplitude modulation systems examining tradeoffs in different communication systems.
      vi. Ability to study, design, and build angle modulation systems examining tradeoffs in different communication systems.
      vii. Ability to perform experiments in converting analog information into digital data via sampling, quantization, and coding. Ability to collaborate together by working in teams of 3 to 4 students.
b. This course supports the following ABET Student Outcomes:

   i. SO-6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

8. Brief List of Topics to be Covered:

   a. General micro-controllers architecture
   b. Signal analysis
   c. Periodic signal spectra
   d. Linear time invariant systems and filters
   e. Introduction to modulation
   f. Amplitude modulation
   g. Frequency modulation
   h. Sampling
   i. Pulse code modulation