EE 341L: Communication Systems Lab

**Designation:** Required for Systems Track students and elective for others.

**Catalog Description:** Experiments illustrating the basic principles of communication systems.

**Credits:** 1

**Prerequisites:** EE 315 Signal and Systems Analysis, EE341 Introduction to Communication Systems (corequisite)

**Class/Lab Schedule:** one 3 hour lab per week

**Topics Covered:**
Lab is taken concurrently with EE341 and gives students experience. There are eight labs covering:
- Signal Analysis (1 week)
- Periodic Signal Spectra (1 week)
- Linear Time Invariant Systems and Filters (2 weeks)
- Introduction to Modulation (1 week)
- Amplitude Modulation (2 weeks)
- Frequency Modulation (2 weeks)
- Sampling (1 week)
- Pulse Code Modulation (1 weeks)

**Text Book and Other Required Materials:** Analog and Digital Communication Systems Lab Handout

**Course Objectives and Their Relationship to Program Objectives:**
This lab course complements EE341 as students conduct experiments with signals, systems, and communication systems. Systems are built with discrete components and also verified through matlab and analytically. [Program Objectives this course addresses: 1, 2, and 3.]

**Course Outcomes and Their Relationship to Program Outcomes:**
The following are the course outcomes and the subset of Program Outcomes (numbered 1-11 in square braces "[ ]") they address:
- Study signal and linear time invariant system properties. [2,3,5]
- Study, design, and build amplitude modulation systems examining tradeoffs in different communication systems. [2,3,5,8]
- Study, design, and build angle modulation systems examining tradeoffs in different communication systems. [2,3,5,8]
- Perform experiments in converting analog information into digital data via sampling, quantization, and coding. [2,3,5]
- Laboratories are conducted by working in teams of 3 to 4 students. [4]

**Contribution of Course to Meeting the Professional Component**
Engineering Topics: 100%
**Computer Usage:**
Students use matlab to design and simulate different communication systems and study signal and system properties.

**Design Credits and Features:**
EE 341L has 1 unit of design credit. In the laboratories, students design and build different communications systems using discrete hardware and matlab tools.

**Person(s) Preparing Syllabus and Date:** A. Kuh and J. Yee, March 28, 2009