The Ohio State University
Department of Electrical and Computer Engineering

ECE 508 – Communication Laboratory

Autumn 2009

Instructor: – Rohit Aggarwal, aggarwar@ece.osu.edu

Web Page: `http://www.ece.osu.edu/~potter/ECE508`

The lab manual, announcements, handouts, and links to resources will be posted on the web page.

Objectives: The primary goal of this course is to understand the fundamental principles of analog and digital communications. The laboratory exercises will employ an IF transceiver, the National Instruments PCI-5640R, as a software-defined radio platform for teaching and learning. Each week, students in the laboratory will explore a focused topic via a set of guided exercises.

Lab Sections:
- Thursdays 1:30-5:18
- Tuesdays 1:30-5:18

Open Labs:
- Fridays 1:30-3:30.

Office Hours:
- Potter: Wednesdays 11:30am-1:00pm, DL716
- Rohit: Fridays, 1:30-3:30pm, DL569

Text: *Analog and Digital Communications: Laboratory Explorations using a Software-defined Radio Approach*, L. C. Potter, Beta Edition, 2009.
Additional references and resource materials are available from the course web site.

Grading:

Participation	10%
Lab reports	72%
Modem demonstration	18%

Weekly Topics: (tentative)

Week	Topic
1	Introduction
2	Envelope detector
3	Filtering
4	Coherent AM demodulation
5	Frequency Modulation
6	Pulses and the Eye
7	Phase Shift Keying (PSK)
8	QAM project
9	QAM project
10	FM Broadcast demodulation

Reports: Brief laboratory reports of two to three pages are to be submitted for laboratory sessions 1 to 7. The reports may be submitted by teams of two students. The lead writer must be identified on each report, and each student must be lead writer for four of the reports. Reports are due at the beginning of the following weekly lab session. A one page prelab exercise may appear in some weeks; prelabs will be announced in advance and are to be completed individually. Prelabs are due at the beginning of the weekly lab session. A four page report for the final two-week project (QAM) may be submitted by teams of two students during week 10. For the week 10 exercise, the report can be completed and submitted during lab hours. The **ECE Honor Code** applies to all work submitted in ECE508; thus, you are encouraged to use open-source materials, but you must cite them in your reports.