Klipsch School of Electrical and Computer Engineering
College of Engineering
New Mexico State University

EE 585: *Telemetering Systems*, 3.0 Credits

Fall 2012

Class Schedule: MWF 2:35-3:25 PM
Class Location: Thomas & Brown, Rm 304

Instructor:
Dr. Charles (Chuck) Creusere
Room 160D Goddard Hall
Phone: 646-3919
email: ccreuser@nmsu.edu

Office hours: Th 1:30-2:30; by appointment (recommended).

Course Description:

Integration of components into a command and telemetry system. Topics include analog and digital modulation formats, synchronization, link effects, and applicable standards.

Prerequisites:

Undergraduate background in Signals and Systems (EE312/EE314 at NMSU). Students need skills involving integral and differential calculus and differential equations, Fourier series and Fourier transform techniques, and linear system representation. Students will also need to know/learn how to access Canvas at `learn.nmsu.edu` where class assignments and other information will be posted.

Textbook:
Introduction to PCM Telemetering Systems, 2nd ed., by Stephen Horan, CRC Press, 2002. Class notes, homework solutions, and other materials are available through the class Web page. Students will need a computer account to access the Web page. The computer will also need to have an Adobe Acrobat reader installed.

Software:

MATLAB, Mathcad, or other math analysis programs is needed. Student licences for Matlab are fairly cheap for students not able to use the lab computers on campus. Also, the free program 'octave' is sufficient for assignments in this class as well. See `http://www.gnu.org/software/octave/`

Online Resources:

Class assignments and communications:
Canvas at `learn.nmsu.edu` Note: All Distance Ed students (i.e., students enrolled in the M70 section) will also be added to the non-DE M1 section on the Canvas webpage. Routine assignments will be posted on the M1 section for ***all*** students in the class. The M70 Canvas page will only be used for class materials which apply *only* to the DE students. I will announce in class lectures or via announcements on the M1 section page when there is something posted on the M70 section page.

Class lectures will be recorded and available at the following webcite:
http://mediasite-server.nmsu.edu/ictmsite5/Catalog/pages/catalog.aspx?catalogId=39af1236-35c6-4815-85aa-476812bcadaa

Course Objectives:

- To describe electrical characteristics of sensors and the mathematic representation of associated signal models.
- To be able to fit a mathematical model to data for analysis and calibration purposes.
- To apply Fourier transform techniques in representing deterministic baseband and bandpass signals
- To develop competency in the techniques for sampling and filtering signals and associated sampling hardware
- To become familiar with the standards for packaging and transmitting data over radio and Internet channels
- To understand data synchronization processes from the bit level to the network level
- To understand representations for time and position.
- To understand analog and digital modulation techniques for radio channels and the effects of the channel on data transmission
- To understand microwave transmission techniques and associated antenna systems

Grading

Homework: There will be regular homework assignments that will be posted each week on Canvas. Worth 20% of the final grade. Late assignments will not be accepted. Solutions will be available on the class website.

Quizzes: There will be online quizzes given at regular intervals covering major subject areas in the class. They will be worth a total of 25% of the final grade. There will be no makeup quizzes except in the case of serious documented illness.

Final: This class will have a final worth 25% of the final grade. It will due/occur on Wednesday, December 12, 2012.

Project: There will be one project worth 30% of the final grade. The project will have three parts: a proposal worth 5%, the presentation worth 5% and the final report worth 20% of the final grade. Distance Ed students will need to create and submit (by the project report deadline) a Powerpoint or PDF presentation but they will **not** need to actually ***present*** it to the class. **Due Dates:** Proposal—Friday Octorber 5, 2012 by 5PM MST; Project report-- Friday, December 7, 2012 by 5:00 PM MDT.

Re-grading: If a student feels that the grading on any assignment or exam is in error, they must bring the problem to the instructors attention **within 1 week** of receiving the graded assignment and solutions.

Calculating Final Grades: Students can never get a lower grade in the class than they would earn if the final score is evaluated an absolute scale (e.g., 90-100 = A, 80-89 = B, etc.). At the instructor's discretion, however, clustering may be used which ***can only improve*** a student's final grades. Letter grades will not be assigned for individual exams.

Policies:
You may discuss homework and programming assignments with either myself, the TA, or your peers. This discussion could include among other things, various approaches to a homework problem, algorithms for a software project, programming tips, and various theoretical insights. Be aware, however, that all submitted solutions to homeworks and projects must be written or coded (in the case of software) by the individual.

There is to be no "sharing" of solutions. **Any plagiarism or cheating will result in an automatic F in the course.**

Plagiarism is using another person's work without acknowledgment, making it appear to be one's own. Intentional and unintentional instances of plagiarism are considered instances of academic misconduct and are subject to disciplinary action such as failure on the assignment, failure of the course or dismissal from the university. The NMSU Library has more information and help on how to avoid plagiarism at http://lib.nmsu.edu/plagiarism/

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) covers issues relating to disability and accommodations. If a student has questions or needs an accommodation in the classroom (all medical information is treated confidentially), contact:
Trudy Luken
Student Accessibility Services (SAS) - Corbett Center, Rm. 244
Phone: 646.6840 E-mail: sas@nmsu.edu
Website: www.nmsu.edu/~ssd/

NMSU policy prohibits discrimination on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex, sexual orientation, spousal affiliation and protected veterans status. Furthermore, Title IX prohibits sex discrimination to include sexual misconduct, sexual violence, sexual harassment and retaliation.
For more information on discrimination issues, Title IX or NMSU's complaint process contact:
Gerard Nevarez or Agustin Diaz
Office of Institutional Equity (OIE) - O'Loughlin House
Phone: 646.3635 E-mail: equity@nmsu.edu
Website: http://www.nmsu.edu/~eeo/

Prepared by: C. Creusere, 08/21/12