

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

**EE 312: *Signals & Systems I*, 3.0 Credits  
Fall 2012**

**Class Schedule:** MWF 10:30-11:20 AM

**Class Location:** Thomas & Brown, Rm 204

**Instructor:**

Dr. Charles (Chuck) Creusere

Room 160D Goddard Hall

Phone: 646-3919

email: [ccreuser@nmsu.edu](mailto:ccreuser@nmsu.edu)

**Teaching Assistant:**

Sean Clifton, email: [sclifton@nmsu.edu](mailto:sclifton@nmsu.edu)

Office Hour: 9:30-10:30 in the Power Lab

Problem Solving Session: Thursdays at 5PM, room TBD

**Office hours:** Tu 1:30-2:30, Th 10:30-11:30; by appointment (recommended).

**Course Description:**

Transform methods for solution of continuous- and discrete-time systems. Fourier and Laplace transforms. Frequency response and Bode plots. z-transform. Continuous- and discrete-time convolution.

**Prerequisites:** A grade of C or better in EE210 Engineering Mathematics I, EE280 DC and AC Circuits, and MATH392 Differential Equations.

Students will be automatically dropped without these prerequisites.

**Textbook:**

[Signals & Systems, 2/E](#) by Alan V. Oppenheim and Alan S. Willsky (ISBN13 978-0138147570)

**Calculator Policy:**

Only the following Klipsch School-approved calculators will be allowed during exams: [Casio fx-115](#) models (calculator must contain fx-115 in its model name), [HP 33s](#) and [HP 35s](#), and [TI-30X](#) and [TI-36X](#) models (calculator must contain TI-30X or TI-36X in its model name). Other calculators **may** be approved by the instructor subject to his inspection.

**Software:**

MATLAB , Signal Processing Toolbox (available in T&B labs). Purchase of MATLAB is optional.

**Online Resources:** Canvas

**Course Objectives:**

1. Understanding different types of signals (continuous-time, discrete-time, periodic, etc.).
2. Understanding systems representations (e.g., impulse responses), their implementations (e.g., convolution and difference/differential equations), and their properties (e.g., linearity).
3. Understanding and being able to apply transform-domain analysis to signals and systems.
4. The ability to apply all of the above to simple applications in signals processing, communications, and control.

### **Contributions of EE312 to Meeting the Professional Component**

This course contributes three semester hours of engineering topics. Linear system theory and Fourier analysis, together with the mathematical modeling of physical systems, build toward an understanding of frequency response, the core concept of the course. This provides a bridge between the mathematical concepts learned in algebra, trigonometry, and calculus, and the design of control, signal processing and communication systems as taught in later course work.

### **Relationship of the Course to Program Objectives**

This class addresses the following outcomes:

- I.b. Apply computers to assist in solving EE problems.
- II.e. Knowledge of advance Math, Diff. Eq and vector calculus
- II.f. Knowledge of engineering science
- III.a. Ability to apply knowledge of math, science and engineering
- III.k. Ability to use the techniques, skills and modern engineering tools necessary to engineering practice.

### **Grading**

Homework: There will be weekly homework assignments that will be posted each week on Canvas. Worth 15% of the final grade. Late assignments will not be accepted. Solutions will be available on the class website.

Exams: There will be two midterm exams, each worth 20% of the final grade. There will be no makeup exams except in the case of serious documented illness. The exams will be held outside of regular class times in order to give students as much time as possible to work on them. The dates of the exams will be in class on: Wednesday, Oct. 3, 2012 and Friday, Nov. 2, 2012. If you have any professional conflicts with these dates and times, you must contact me at least 2 weeks in advance to arrange to take the exam early. Makeup exams will only be given with proof of medical illness.

Final: The final, comprehensive examination is scheduled for Monday, December 10, 2012 from 10:30AM-12:30PM. It is worth 30% of the final grade. *Student will have the option of replacing the numeric score of one midterm with that of their final.*

Quizzes: There will be weekly Canvas-based quizzes. They will be worth 10% of the total grade.

Challenge Quizzes: There will also be frequent Canvas-based 'challenge quizzes'. These will be short-time frame quizzes that are based on 'challenge problems' that we do in-class. In total, they will be worth 5% of the class grade.

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 could improve some 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](mailto:sas@nmsu.edu)

Website: [www.nmsu.edu/~ssd/](http://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](mailto:equity@nmsu.edu)

Website: <http://www.nmsu.edu/~eeo/>

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