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ECE 308  
Signals and Systems – Course Syllabus  
Fall 2008  
Instructor: Guillermo Atkin

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Office: SH – 141

Office Hours: T and R: 10:00 to noon.

e-mail address: [atkin@iit.edu](mailto:atkin@iit.edu)

Class Hours: M and W: 11:25 to 12:40 PM, SH - 118

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**Description:** Time and frequency domain representation of continuous and discrete time signals. Introduction to sampling and sampling theorem. Time and frequency domain analysis of continuous and discrete linear systems. Fourier series convolution, transfer functions. Fourier transforms, Laplace transforms, and z-transforms. 3-0-3

**Prerequisites:** ECE 213

**Course Objectives:**

After completing this course, the student should be able to:

1. Understand mathematical descriptions and representations of continuous and discrete signals and systems.
2. Develop input-output relationships for Linear Time Invariant Systems (LTIS).
3. Understand the impulse response of a system and the convolution operator.
4. Use transform techniques for the analysis of LTIS.
5. Use Fourier and Laplace Transform analysis for continuous-time LTIS.
6. Use z-Transform analysis for discrete time systems.

**Course Topics**

1. Signal and System Modeling Concepts.
2. System Modeling and Analysis in the Time Domain.
3. The Fourier series.
4. The Fourier Transform and Its Applications.
5. The Laplace Transformation.
6. Applications of the Laplace Transform.
7. State-Variable Techniques.
8. Discrete-Time Signals and Systems.
9. The Discrete Fourier Transform.

**Textbook:** Signals and Systems: Continuous and Discrete, 4/E, **Rodger E. Ziemer**, *University of Colorado at Colorado Springs*; **William H Tranter**, *the University of Missouri, Rolla*; **D. R. Fannin**, *University of Missouri, Rolla*. ISBN-10: 013496456X; ISBN-13: 9780134964560; Publisher: Prentice Hall; 1998.

**References:**

Charles L. Phillips, John M. Parr, Eve A. Riskin; "Signals, Systems and Transforms", Prentice Hall, Third Edition, 2003

Haykin, Simon and Van Veen, Barry; Signals and Systems. Wiley, 1999.

Poularikas, A. D. and Seely, S.; Signals and Systems, PWS Engineering, Second Edition, 1991.

McGille, C. D. and Cooper, G. R.; Continuous and Discrete. Signal and System Analysis, HRW, 1984.

Oppenheim, A. V. and Willsky; Signals and Systems, Prentice-Hall, 1983.

Frederick, D. K. and Carlson, A. B.; Linear Systems in Communication and Control, Wiley, 1971.

**Grading:** Coursework will be graded as follows:

1. Homework            15%    (every week, due on Mondays)
2. Exams 1            25%    (09/24/08)
3. Exams 2            25%    (10/29/08)
4. Final exam           35%    (12/08/08; 2:00 to 4:00 PM)

Homework solutions will be posted in the Blackboard on Wednesdays. HW should be submitted (hard copies) at the beginning of the class on Mondays. No late HW will be accepted without previous instructor consent.

**Grade scale:**

- A:    87 – 100
- B:    74 – 86
- C:    60 – 74
- D:    50 – 59