

2010/ ECE216H1S SIGNALS AND SYSTEMS

Course Description: Introduction to the general mathematical modeling of signals and systems, useful in many areas of engineering including communications, control, biomedical processing and power engineering, to name a few. Fundamental concepts of time-domain and frequency-domain analysis are covered, e.g. convolution, impulse response, Fourier series, Fourier transforms, sampling.

Textbook: A.V. Oppenheim, A.S. Willsky, and S. H. Nawab
Signals & Systems: Second Edition, Prentice Hall, ISBN 0-13-814757-4, 1997.

Course Coordinator

This course is coordinated by : Kostas Plataniotis
E: kostas@comm.utoronto.ca
P : 416 946 5605
A : Bahen 4140

Evaluation Scheme:

Percentage	Component	
1	25	Mid-term Exam I (Tuesday, February 9 2010)
2	25	Mid-Term Exam II (Tuesday, March 9, 2010)
3	50	Final Examination

Learning Outcomes

1. Appreciate concepts of signals and systems can be used in a wide variety of disciplines and applications.
2. Understand signals and systems in terms of both the time and transform domains, taking advantage of the complementary insights and tools that these different perspectives provide.
3. Solve problems involving convolution, Fourier transform and system analysis.

ECE216: 2009/10 Lecture Schedule (Updated December 12, 2009)

Week 1 January 4-8	Terminology, basic concepts	1.1–1.2
Week 2 January 11-15	Complex exponentials, sinusoids, impulse and step functions	1.3–1.4
Week 3 January 18-22	Definitions of system properties & Convolution	1.5-1.6, 2.1
Week 4 January 25-29	Convolution, LTI properties	2.1-2.2, 2.3
Week 5 February 1-5	LTI system properties, difference equations as LTI systems	2.3-2.4
Week 6 February 8-12	Complex exponentials, Introduction to Fourier Analysis, Mid-term exam I	3.2-3.3
	READING WEEK (Feb 15-19)	
Week 7 February 22-26	Continuous time Fourier series, transform	3.3, 3.5, 4.1
Week 8 March 1-5	CTFT examples, properties	4.2-4.3
Week 9 March 8-12	CTFT properties, Mid-term Exam II	4.4-4.5
Week 10 March 15-19	Discrete time Fourier transform	3.6-3.7
Week 11 March 22-26	DT Fourier transform	5.1-5.3
Week 12 March 29 – April 2	DTFT properties	5.3-5.5
Week 13 April 5-9	Sampling, Review	7.1-7.3