ELEC3400 SIGNAL PROCESSING, 2003

Course Overview

 The purpose of this course is to familiarize the students with the field of digital signal processing as a viable alternative to the analogue signal processing. We will study a number of topics, namely, discrete-time signals and systems; discrete-time LTI systems; implementation of discrete-time systems; the z-transform; inversion of z-transform; analysis of discrete-time LTI systems in the z-domain; Frequency analysis of discrete-time systems and the DFT; FFT; design of FIR and IIR digital filters; Sampling and reconstruction of signals; and finite word length effects.

Course Structure

 The subject consists of 12 weeks of lectures, three laboratory experiments and seven tutorials:
 Lectures: Friday 15:00-17:00 [ES204]; Tutorials: Wednesday 16:00-17:00 or 17:00-18:00 [EAG01];
 Labs: Monday 16:00-18:00 [EE107/108].

Textbook

 B.P. Lathi. *Signal Processing & Linear Systems*, Oxford University Press, 1998. (Required)

Assesment

Assignments	15% (5% each)
Labs	15% (5% each)
Quiz	20%
Exam	50%

Timetable

Week	Lecture	Group 1	Group 2	Assignment
1: 24/2-28/2	Intro to discrete-time systems and signals [Ch 8]			
2: 3/3-7/3	Sampling and signal reconstruction [Ch 5 & Notes]	Tut 1	Tut 1	Asgn 1 Out
3: 10/3-14/3	Time domain analysis of D-T systems [Ch 9]	Tut 2	Tut 2	
4: 17/3-21/3	Time domain analysis (continued) [Ch 9]	Lab 1	Tut 3	**Asgn 1 Due**
5: 24/3-28/3	Fourier analysis of D-T signals [Ch 10]	Tut 3	Lab 1	Asgn 2 Out
6: 31/3-4/4	Z-transform [Ch 11]	Tut 4	Tut 4	
7: 7/4-11/4	Properties of Z-transform [Ch 11]	Tut 5	Tut 5	**Asgn 2 Due**
14/4-25/4	RECESS			
8: 28/4-2/5	Analog filter design [Ch 7]	**QUIZ** on Mon 16:00-18:00 [ES204]		
9: 5/5-9/5	Digital filter design [Ch 12]	Lab 2	Tut 6	
10: 12/5-16/5	NO LECTURE	Tut 6	Lab 2	Asgn 3 Out
11: 19/5-23/5	Digital filter design (continued) [Ch 12]	Lab 3	Tut 7	
12: 26/5-30/5	State space analysis	Tut 7	Lab 3	**Asgn 3 Due**
13: 2/6-6/6	REVIEW (on Monday 16:00-18:00 [ES204])	(See Uni Timetable for Exam Time)		