ECE 425 – Image Science and Engineering
Spring Semester 2000

POLICIES AND SCHEDULE January 14, 2000

Grading Policies

I will regrade homeworks and exams if there is a clear error or oversight on my part. I will not regrade for a reason such as "I think I deserve more points!"

The final semester letter grades will be determined using a floating curve specified only after all scores are in, including the final exam

Withdrawal Policies

I will adhere to ECE and University policies with respect to requests for withdrawal.

Late Assignments and Missed Exams

Late assignments and missed exams will receive zero credit unless other arrangements are made with me at least 1 week in advance of the due date or exam date.

Schedule (an ideal goal; may be changed at instructor's discretion)

Lecture	*Date*	*Subjects to be covered*
1	1/13	Definitions, overview, the systems approach
----------	**Section I Mathematical Tools**	----------
Mathematical Background		
2NASA1/18		Complex notation, simple functions, systems and operators
3NASA1/20		SADIE Image Processing Software Demonstration
Convolution and Fourier Transforms		
3	1/25	1-D convolution
4	1/27	1-D Fourier transform
Linear Filtering and Sampling		

5	2/1	The Fourier transform and LSI systems

Two-dimensional Functions and Operations

6	2/3	2-D functions, 2-D convolution and correlation
7	2/8	2-D Fourier transform
8	2/10	Hankel transform
9	2/15	2-D linear systems - Part I
10	2/17	2-D linear systems - Part II
11	2/22	Review
12	**2/24**	**1st Term Exam**

Discrete Fourier Transform and Fast Fourier Transform

13	2/29	Discrete Fourier Transform (DFT); inverse transform; properties; Fast Fourier Transform (FFT)

---------- Section II Optical Tools ----------

Radiometry

14	3/2	Geometric parameters for radiometry, solid angle, radiometric and photometric quantities and units
15	3/7	Radiometric sources, blackbodies, spectral transmittance, spectral reflectance
16	3/9	Laws of radiometry, radiation transfer, camera equation

********** **3/11-3/19 Spring Break** **********

Geometric Optics

17	3/21	Lenses, focal length, apertures
18	3/23	Simple imaging systems
19	3/28	Aberrations

Diffraction

20	3/30	Introduction to diffraction
21	4/4	Diffraction effects on image quality

---------- Section III Integrated Imaging Systems Analysis ----------

Detection of Radiation

22	4/6	Detectors, performance figures-of-merit, noise, photographic film
23	4/11	Human vision system, architecture, system analysis

Integrated Imaging System Analysis

24	4/13	Imaging system quality measures, spatial resolution, PSF, OTF, MTF, ESF, LSF
25	4/18	Image scanning, sampling, and aliasing - Part I
26	4/20	Image scanning, sampling, and aliasing - Part II
27	SPIE4/25	System imaging chain simulation
28	SPIE4/27	Review
29	5/2	**2nd Term Exam**
30	5/9	Final Exam @ 11AM