

**ME 659 Mechanical Control and  
ECE 684 Control System Concept  
Fall 2001**

8:30 - 9:20 MWF - 123WH

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Office Hours: 9:30-10:30 Mon. ,Wed. , Fri. or by appointment

Textbook: B. Kuo, Automatic Control Systems, 7th ed., Prentice Hall, 1995.

Web Site: <http://www.engr.twsu.edu/me/me659/>

Homework and Projects:

1. Use only 8 1/2 X 11 paper.
2. Some homework problems will be solved on the computer.
3. Each day late submission of homework is subjected to 10 points grade reduction.
4. A design project might be assigned near the end of the semester.
5. There will be 8 homework during the semester. The due for each homework is two weeks after all related materials is discussed.
6. HW1,2,4,5 are graded out of 100, and the rest are 150 points homework.
7. Homework should be submitted at beginning of the class.
8. There might be some pop quiz during the semester.

Grading:

Three hourly exams	300	
Homework		100
Project		100
Total		<hr style="width: 10%; margin-left: auto; margin-right: 0;"/> 500

**PREREQUISITES:** The prerequisites for this course are ME 402, EE282 and Math 555.

If you do not have these prerequisites you should not be taking this course. Lectures and assignments are prepared and given on the basis of these prerequisites.

**If you have mistakenly enrolled in ME 659 without all of the above described prerequisites please contact the instructor.**

**Tentative Course Schedule for  
ME 659/ECE 684  
Fall 2001**

<b>TOPIC</b>	<b>READING</b>	<b>HOMEWORK</b>
Introduction	Chapter 1	
Complex numbers	2.1 - 2.3	hw1 { 2.1 a,b,c 2.2 a 2.4; 2.6 a,b; 2.20a (use Comp.) 2.5 a,b 2.10, 2.5a,b(SSform)
Laplace Transform	2.4	
Inverse Laplace Transform	2.5	
Linear Diff Eqns	2.6, 2.7	
State Space Methods	2.8, 2.9	
Transfer Functions	3.1, 3.2	hw2 { 3.1 a,b 3.4 (1st two only), 3.15a,b
Block Diagram	3.3	
Physical Systems & Modeling	4.1 - 4.3, 4.4	hw3 4.6a; 4.8
System Stability	6.1 - 6.4	hw4 { 6.1 a,b 6.2 a,d; 6.3 a,c
Routh's Stability	6.5	
<b>Exam I</b>		
Steady State Error	7.1-7.3	hw5 { 7.3 a,c 7.12; 7.13; 7.23 a,b,c
Transient Response	7.4 , 7.5, 7.7	
Root Locus Plots	8.1, 8.2, 8.3	hw6 { 8.5 a,c,d(by hand); 8.7 a; 8.8 a 8.16 a
Introduction to Matlab		
Root Locus Design	8.5	
Root Contour	8.6	
Project		
Derivative Control	10.1, 10.2	hw7 { 10.3 a,b 10.8 a,b,c 10.13a; 10.22a; 10.23a
<b>Exam II</b>		
Integral Control	10.3, 10.4	
Phase Lead & Lag Control	10.5, 10.6	
Bode Plots	9.1,9.2	hw8 { 9.1a; 9.2a,c; 9.3 9.9 a, 9.11a
Nyquist Plots	9.5, 9.6, 9.8	
Gain Margin Phase Margin	9.14-9.15	
Nyquist Design		
Review for Exam		
<b>Exam III</b>		