

ECE421 Fall 2014

Dr. Gerald Cook Rm 3207 Nguyen Engineering Building

gcook@gmu.edu (703) 993-1699

Textbook: Modern Control Engineering, 5th Edition, K. Ogata, Prentice Hall, 2010, Chapters 1,2, 5 - 7.

9:00-10:15 Tuesday -Thursday, Lecture Hall Rm 2

1. Tuesday Aug. 26 Introduction 1
2. Thursday Aug. 28 Introduction and Block diagrams 1, 2
3. Tuesday Sept 2 First-order systems 5
4. Thursday Sept 4 Block diagrams 2
5. Tuesday Sept 9 Second-order systems 5
6. Thursday Sept 11 Second-order systems 5
7. Tuesday Sept 16 Second-order systems 5
8. Thursday Sept 18 Types of control actions 5
9. Tuesday Sept 23 Stability analysis with the Routh array 5
10. Thursday Sept 25 Steady-state error 5
11. Tuesday Sept 30 Steady-state error 5
12. Thursday Oct 2 Test 1, Chapters 1, 2, and 5
13. Tuesday Oct 7 Introduction to pole movement, the root locus 6
14. Thursday Oct 9 Root locus 6
15. Thursday Oct 16 Root locus 6
16. Tuesday Oct 21 Introduction to compensator design 6
17. Thursday Oct 23 Compensator design using root locus 6
18. Tuesday Oct 28 Compensator design using root locus 6
19. Thursday Oct 30 Compensator design using root locus 6
20. Tuesday Nov 4 Polar plots and the Nyquist stability criterion 7
21. Thursday Nov 6 Review of Bode plots 7
22. Tuesday Nov 11 Test 2 Chapters 6 and 7
23. Thursday Nov 13 Relative stability, gain and phase margins 7
24. Tuesday Nov 18 Gain and phase margins 7
25. Thursday Nov 20 Compensator design using Bode plots, phase lag 7
26. Tuesday Nov 25 Compensator, complete phase lag, begin phase lead 7
27. Tuesday Dec 2 Compensator design, complete phase lead 7
28. Thursday Dec 4 Compensator design, phase lead-lag combination 7

Final Exam Thursday Dec 11, 7:30 to 10:15 am,

Office Hrs Tuesday 12 to 1pm and Wednesday 3 to 4pm

HOMEWORKS and Due Dates

1. Tuesday Sept 2 B 2.4
2. Tuesday Sept 9 B 2.1, 2.2, 2.3, 5.1
3. Tuesday Sept 16 B 5.2, 5.3, 5.5, 5.9, 5.12, 5.13
4. Tuesday Sept 23 B 5.15, 5.20, 5.21, 5.22, 5.23, 5.24
5. Tuesday Sept 30 B 5.26, 5.27, 5.28
6. Tuesday Oct 7 B 6.1, 6.2, 6.5, 6.6
7. Thursday Oct 16 B 6.11, 6.12a, 6.14, 6.18
8. Thursday Oct 23 B 6.19, 6.20
9. Thursday Oct 30 B 6.21, 6.23, 6.28
10. Thursday Nov 6 B 7.16, 7.18, 7.24, 7.25
11. Thursday Nov 13 B 7.31, 7.34
12. Thursday Nov 20 B 7.33

Project assignments will be emailed to the class as well as being posted on the class website.

Important Dates

Thursday Oct 2, Test 1
Thursday, Oct 9, Project 1 due
Tuesday, Nov 11, Test 2
Tuesday Nov 25, Project 2 due
Thursday Dec 11, Final Exam 7:30-10:15

Grading

Test 1	25%
Test 2	25%
Homework	10%
Project 1	5%
Project 2	5%
Exam	30%