THE CITADEL
ELECTRICAL & COMPUTER ENGINEERING

ELEC 312-81, Systems I
Course Syllabus for Spring 2015
MW 6:45pm – 8:00pm, Room: Grimsley 305

Instructor: Jason S. Skinner, Ph.D., P.E.
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Email: jason.skinner@citadel.edu
Schedule: `http://ece.citadel.edu/skinner/schedule`

Office Hours: MW 2pm-5pm, and by appointment

Textbook: *Control Systems Engineering*, 7th Edition, N. S. Nice – Student Companion Site

Websites: Professor: `http://ece.citadel.edu/skinner`
Course: `http://ece.citadel.edu/courses`
The course website will be used to post course information (such as this syllabus), lecture slides and notes, homework and projects assignments, corrections and answers to questions about assignments, and individual grades.

Prerequisites: ELEC 309 – Signals and Systems

Objectives:
1. Introduction to feedback control systems.
2. Understanding the stability and response of feedback control systems.
3. Introduction to control system design and compensation techniques.

Description: An introduction to feedback control systems, system representation, stability, root locus and frequency response, and compensation.

Important Dates:

Monday, January 19 ..... MLK Day (No Classes)
Monday, January 26 ..... CGC Drop/Add ends
Monday, February 16 ..... Test 1 (tentative)
Monday, March 9 ..... Last Day to Withdraw with grade of "W" for CGC
Monday, March 16 ..... Test 2 (tentative)
Friday, March 20 ..... Spring Break begins
Sunday, March 29 ..... Spring Break ends
Monday, April 27 ..... CGC Classes end
TBD ..... Final Exam

Course Outline:

Required Reading	Topics	Approximate Time Frame
1.1 to 1.7	Introduction, Basic Signals	150 minutes
2.1 to 2.3	Laplace Transforms	150 minutes
2.4 to 2.6	Electrical and Mechanical Systems	150 minutes
4.1 to 4.3	First-Order Systems	75 minutes
4.4 to 4.6	Second-Order Systems	150 minutes
4.7 to 4.8	Higher-Order Systems	75 minutes
Test 1	Chapters 1 – 2, 4	February 16
5.1 to 5.3	Block Diagrams	150 minutes
5.4 to 5.5	Signal Flow Graphs	150 minutes
6.1 to 6.4	System Stability	75 minutes
7.1 to 7.7	Steady-State Error Analysis	150 minutes
8.1 to 8.10	Analysis using Root Loci	150 minutes
9.1 to 9.6	Design using Root Loci	150 minutes
Test 2	Chapters 5 – 9	March 16
10.1 to 10.2	Frequency Response and Bode Plots	225 minutes
10.3 to 10.6	Nyquist Diagrams	150 minutes
Final Exam	Chapters 1 – 2, 4 – 10	TBD

Homework: Homework will be assigned on each Wednesday and will be collected at the **BEGINNING** of the class period on the following Wednesday. Exact due dates will be provided on the courses website, by email, and in class when the homework is assigned. **Late homework will be assessed a 20% penalty. Homework will not be accepted after answers are handed out and will be given a zero grade.** If you will be absent on the day of an assignment, arrange to have a classmate turn in your work for you. You may obtain assistance when doing your homework. However, copying of homework is not the same as assistance–your homework is a graded assignment and must be your own work.

Homework Format: Homework is to be done on the **front side only** of **engineering** or **looseleaf** paper in a neat and easy to understand format. Each page of the homework must have the **student's name** and **page number**. The submitted homework solution should be able to stand on its own. It should provide enough information so that it is not necessary to consult the actual published problem to understand the solution. The submitted homework solution must have a **single-page cover sheet** that lists the answers to each problem (in order) along with a reference to the page of the homework where that answer is determined. If the answer to a particular part of a question is a sketch or drawing, then the corresponding list item on the cover sheet should only contain the reference to the page of the homework that contains the sketch or drawing. **Homework that does not meet the formatting requirements will receive a grade of ZERO.**

MATLAB Simulation Projects: MATLAB computer software projects form an integral part of this course and will be assigned regularly throughout the semester. Students are expected to be well versed in MATLAB programming. **Collaboration is not allowed on projects.**

Tests: There will be two in-class tests and one final exam. **Collaboration is not allowed on tests or final exams.** The final exam will be cumulative. Assigned tests are required. Unless authorized to the contrary by Dr. Skinner, such tests take precedence over all other duties or activities. If you know you will miss an exam, you must let Dr. Skinner know as soon as possible so a make-up exam time can be arranged. Make-up exams will only be given for those students that have made a reasonable attempt to contact Dr. Skinner.

Grading: Students will be graded on everything that is required to be turned in. All exams are scheduled well in advance. Due to the potential unfairness of make-up exams, they will only be given in extreme circumstances. Your final grade in the course will be determined as follows:

Homework	15%
Projects	15%
2 In-Class Tests	each 20%
Final Exam	30%

The grading scale used in this course is:
A = 90 – 100, B = 80 – 89, C = 70 – 79, D = 60 – 69, F = 59 or below.

Attendance: Attendance is mandatory. Unless circumstances preclude it, it is your responsibility to notify Dr. Skinner of any schedule conflicts or excused absences that will result in your missing class. It is college policy that a grade of F may be awarded to a student if that student misses more than 20% of the course meetings (excused or unexcused). For this course, **six (6)** classes constitute 20% of the class meetings.

Classroom Decorum: No food or drink is permitted in the classrooms of this building. Proper attire is encouraged, and ECE department policy prohibits hats, cutoffs, shorts, tank tops, and feet without socks in class.

Special Needs Students currently documented or anticipate being documented as Learning Disabled (LD), as having Attention Deficit Disorder (ADD), or with another condition for which you might need special accommodation during the semester must provide written documentation of the condition and of the accommodation needed to me within two weeks of the semester start. You may then choose, by notifying Dr. Skinner before the start of each exam or assignment, whether you will need any accommodation. Notification after the start of an exam or last minute notification on an assignment will not be accepted. Please Note: To request academic accommodations (for example, a note taker), students must also register with Academic Support/Special Services, 953-1820, located in Thompson Hall. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements.

Cheating and Collaborative Work According to The Citadel's policies for the preparation of work performed outside the classroom:

> All papers, reports, senior essays, theses, or other written work performed outside the classroom for which a grade is received will be the individual's work and is subject to the limitations imposed by the definition of plagiarism.

According to Webster's New International Dictionary, 3rd Edition: to plagiarize is defined as "to steal and pass off as one's own the ideas or words of another" or to "present as new and original an idea or product derived from an existing source."

CHEATING IN ANY FORM WILL BE FULLY PROSECUTED.