MATH 531 (OR 531)

Information concerning the course will be posted here throughout the semester. Fall 2017

Class meets **10:15 - 11:30 TuTh** in SAS 1220.

The **text** is *Linear Systems*, by Panos J. Antsaklis and Anthony N. Michel. This is the corrected second printing published with Birkhauser in 2006. Students are encouraged to consult other material as the course proceeds. There is an older edition around by a different publisher. I am not sure how many differences there are so if you are using the old edition beware. I know there are some typos and errors in the old edition. There will be some computer projects. You are free to use whichever programming software that you wish. Code listing should be attached to homework.

One popular choice is MATLAB. The *MATLAB Primer* by Kermit Signmon is available at by download as either a PDF or a PS file.

(matlab_primer.pdf)

(matlab_primer.ps)

While some commands will be mentioned in class, students are expected to learn to use the software on their own. Other students are an excellent resource in this regard.

Scicos and **Scilab** are open source alternatives to SIMULINK/MATLAB. Scicos/Scilab has a similar syntax since it is based off the same original MIT project. Numerous toolboxes are included in Scicos/Scilab where they would cost thousands to own in MATLAB. Scicos/Scilab are now available in a single package called **ScicosLab**. Latest versions of ScicosLab for a variety of platforms are available at ScicosLab Download.

Comment on Text: This course is a qualifier course in OR and the first half of the control qualifying sequence in mathematics. Feedback from students is that they find this text a good one to study for qualifiers from. It is somewhat dense for the first time reader. The lectures will carefully pick out what the key ideas are and discuss them in class. Use the lectures as your guide as to what you should study the first time through.

Office Hours: 1:00-2:00 pm (TuTh) and by appointment
Office Phone: 515-3300 (Can leave message)
FAX: 515-3798
email: slc@math.ncsu.edu

There will be 1 or 2 tests, a Final, and some graded homework (both analytical and computational). There will be a number of assigned homework. When I am making up a test I assume that that you have done all the assigned homework. Some of the homework will be designated as graded (to be turned) in homework. Graded homework will vary from small exercises to mini-projects. Group work on the homework not to be turned in is fine. The important thing is to learn and develop your skills. Generally the graded work is due two class periods after it is assigned unless a different due date is given. Graded homework should be your

own work. Final course grades will use plus/minus grading. You may not take the final early. Plan accordingly.

Test 1: Sept 26, Thursday

Test 2: Nov. 21, Tuesday

Final: Dec. 7, Thursday, 8-11. Held in classroom. Plan travel accordingly.

Syllabus: We will not necessarily cover all listed sections in detail. The classroom lectures will explain exactly what we are covering at a given time. The amount of time spent on each of the topics listed below will vary greatly.
Syllabus is below. We would like to do a bit more on Chapter 5 in 531 in which case we will move some of Chapter 6 to 731. This decision will be made later in the semester once we see how things are going.

- Chapter 1: 1.2-1.4, (1.6C, 1.7B, 1.8B, 1.9: State statement of result), 1.10D, 1.11 (theorem), 1.13(No Peano), 1.14-1.15
- Chapter 2: 2.2-2.4,2.6(C Later), 2.7(A,E), [2.2 is a big section] Also frequency response functions.
- Chapter 3: 3.1-3.4, a touch of 3.5
- Chapter 4: 4.1-4.3
- Chapter 6: Stability and Lyapunov stability.
- Chapter 5: 5.1-5.3 [Possibly briefly]

Other Stuff:

Official University Statements

1. Determination of grades: +/- system is used

If there are two tests the grading will be each exam 18% for a total of 36%, homework 34%, final 30%. If there is one test, then the grading will be exam 25%, homework 40% final 35%.
See statements below.

In addition,the following clarifications are used in this course:

2. Policy on incomplete grades and late assignments:

Incomplete grades will not be given, you must complete the assignments for the course as the semester progresses.

Late assignments: will not be accepted without prior permission of the instructor.

Missed Tests: There are no scheduled make up tests. If you must miss an exam, you must notify the instructor as soon as is possible. Note there is both email and a message recorder in his office. Make up exams will be scheduled when there is a valid reason and when prompt notification is given. For example, if your car breaks down on the way to school that may explain why you would need to take the exam later that same day. It would not be an acceptable excuse two days later. For professional travel requests must be made prior to the exam.

3. Policy on absences (excused and unexcused) and scheduling makeup work:

The attendance policy is consistent with the Academic Regulations which can be found at http://www2.ncsu.edu/unity/project/www/ncsu/provost/info/academic_regulations/attend/reg.htm (link)

In addition, the following clarifications are used in this course:

Attendance is required.

Class Absences: if you miss class for any reason, you are responsible for the material covered. Except in very special circumstances, Prof. Campbell will not provide extra help when you miss the class. Every student is expected to have someone in the class whom they can get missed material or assignments from.

Exam Absence: NCSU policy is strictly enforced. Documentation is required for all absences.

Final Exam: The exam will be given at the date and time specified by NCSU Reg & Records. It is your responsibility to arrange travel around this date. The only exceptions are (1) a documented excused absence, or (2) 3 exams in 24 hours (the student is responsible for the paperwork, as indicated in the Handbook for Advising and Teaching)

4. Course Prerequisites / Restrictive Statements:

The prerequisites are listed at http://www2.acs.ncsu.edu/reg_records/crs_cat/MA.html (link).

In addition,the following clarifications are used in this course:

If you are unsure about the prerequisites, please contact Prof. Campbell.

5. Academic Integrity Statement:

Students are expected to follow university guidelines available at http://www.ncsu.edu/provost/academic_regulations/integrity/reg.htm (link)

In addition, the following clarifications are used in this course:

All graded assignments are to be the work of the individual student. General discussions with others are permitted. Ie., asking what is the MATLAB command for eigenvalues and what is its syntax is ok to ask a fellow student. Essentially copying some one else's work, or letting them copy yours is not. The same goes for analytical assignments. When in doubt check with the instructor.
Students failing to following these guidelines will receive no credit for the assignment.

6. NC State policy on working with students with disabilities:

Information can be found at http://www2.ncsu.edu/ncsu/stud_affairs/counseling_center/dss/ (link)

7. Statement on laboratory safety or risk assumption in courses requiring physical activity or field trips:

Students have no special physical activity or field trips for this course.

8. Statement on "pass-through" charges e.g. , lane rental at bowling alley, field trip costs, etc.:

There are no such charges for this course.

Further Information:

Online class evaluations will be available for students to complete during the last 2 weeks of fall and become unavailable before finals begin: 8 a.m. November 22 through 8 a.m. December 8, Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will not know how any one student responded to any question, and students will not know the ratings for any instructors. Evaluation website: https://classeval.ncsu.edu/ Student help desk: classeval@ncsu.edu More information about ClassEval: http://www.ncsu.edu/UPA/classeval/

- NCSU Academic Regulations can be found at http://www2.ncsu.edu/unity/project/www/ncsu/provost/info/academic_policies/ (link)

Supporting Fellow Students in Distress:

As members of the NC State Wolfpack community, we each share a personal responsibility to express concern for one another and to ensure that this classroom and the campus as a whole remains a safe environment for learning. Occasionally, you may come across a fellow classmate whose personal behavior concerns or worries you. When this is the case, I would encourage you to report this behavior to the NC State Students of Concern website:http://studentsofconcern.ncsu.edu/. Although you can report anonymously, it is preferred that you share your contact information so they can follow-up with you personally.

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