MA 523: Linear Transformations and Matrix Theory - Fall 2017

Instructor: Prof. Arvind K. Saibaba **E-mail**: asaibab@ncsu.edu
Lecture: M-W-F 3:00-3:50 PM, 1218 SAS Hall
Office: SAS Hall 3126 **Office Hours**: W-Th 3:50-5, or by appointment.
Website: http://www4.ncsu.edu/~asaibab/classes/ma523/

Topics covered: Vector spaces, linear transformations and matrices, orthogonality, orthogonal transformations with emphasis on rotations and reflections, matrix norms, projectors, least squares, generalized inverses, definite matrices, singular values.

Prerequisite: MA 405, or equivalent. See below for prerequisite test.

Classes will be held from Wednesday, August 16th, 2017 to Friday December 1st, 2017, with the exception of the following dates: September 4 (Labor day), October 6 (Fall break), November 22, 24 (Thanksgiving break).

Course Text: This course is built on "Matrix Analysis and Applied Linear Algebra" by Prof. Carl D. Meyer, SIAM, 2000, ISBN: 978-0-898714-54-8, and "Numerical Matrix Analysis" by Prof. Ilse Ipsen, SIAM ISBN: 9780898716764. Both books are required and the second book is freely available online through NCSU library (see class website).

Course Website: All the homework, solutions, practice problems will be posted on the class website. Moodle will be used only for recording raw scores. Additionally, course announcements will be sent to your NCSU e-mail account on a regular basis.

Course Grade: Final grade for this class will be determined on the basis of homework assignments, 2 midterms, and a final exam, with each category weighted as follows:

Prerequisites:	4%
Homework:	24% (6 homeworks, 4% each)
Mid-terms:	36% (2 exams, 20% each)
Final Exam:	36%

Prerequisites: There will be an in-class closed book exam on **Monday, August 28th** to test your background. The test will be based on Chapters 1-3 of Prof. Meyer's book. A study guide with the specific list of topics is provided on the website.

Homework: Homeworks are assigned roughly every 2 weeks, due on Fridays at the start of class. They will be graded and solutions posted by the week after they are due. Late homework will not be accepted for any reason. You are encouraged to work together on problem sets and attend office hours. However, you must write up your own solutions and list the names of your collaborators.

Midterms and Final Exam: There will be 2 midterms (September 29, November 3 - both Fridays) which will be in-class, and closed book. There will be problem solving sessions before each exam. The final exam will be comprehensive and held on **Monday, December 11, 1-4 PM**. Study guides as well as practice exams will be posted in advance.

Grading scale: The final grade will be assigned based on the total score as

A: (>85) , B: (70-85), C: (60-70), D-F: (<60)

with +/- grading scale. Any regrading requests have to be submitted within one week after they have been initially graded.

Academic integrity: "Academic dishonesty is the giving, taking, or presenting of information or material by a student that unethically or fraudulently aids oneself or another on any work which is to be considered in the determination of a grade or the completion of academic requirements or the enhancement of that student's record or academic career.'' The entire code of conduct is available here https://studentconduct.dasa.ncsu.edu/academic-integrity-overview/.

Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. Contact Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. or visit http://dso.dasa.ncsu.edu/.