SE 284 (AUG) 2:1 Numerical Linear Algebra
General information

Instructors:

MURUGESAN VENKATAPATHI
Office: Room No-122 (SERC)
Phone No: +91-80-2293 3422
e-mail: murugesh@serc.iisc.ernet.in
Office Hours: Walk in.

PHANEENDRA YALAVARTHY
Office: Room No-305 (SERC)
Phone No: +91-80-2293 2496
e-mail: phani@serc.iisc.ernet.in
Office Hours: 2:30PM–3:30PM (Tuesday)

Timings: 3:30PM-5:00PM on Tuesday and Thursday. **Place**: Room No: 202 (SERC).

Main Reference text books[1]:
1. Numerical linear algebra, Lloyd N. Trefethen and David Bau, III, SIAM, 1997.
2. An Introduction to numerical linear algebra, Charles G. Gullen, PWS Publishing, 1994.
3. A handbook of numerical matrix inversion and solution of linear equations, John R. Westlake, Wiley Publishing, 1968.

Grading: Homework/Lab: 25%; Midterm Exam: 25%; Project: 25%; Final Exam: 25%.

Course Philosophy: Numerical linear algebra encompasses many disciplines of science and engineering, dealing with numerical/computational methods associated with the matrices/vectors. As with any numerical methods course, there are two important aspects to this course. The first being understanding the theory behind the techniques/methods taught in the class, and second is knowing the analysis to evaluate these techniques for its strengths and limitations. You will be evaluated on both aspects. The homework problem sets and project are primarily geared towards making you learn the second aspect, whereas the mid term and final exam will be geared towards testing you on the first aspect.

Homework/Project: There will be 6 homework problem sets (serving as laboratory component) with a specific due date and time. Homework problems might require computer programming (preferably in Matlab/Octave[2]). For the final grade, best 5 out of these 6 will be taken into consideration. Each student will either choose or come up with a project proposal (giving details such as importance of the problem, literature review, and feasibility) by the end of first six weeks. This project shall be related to numerical linear algebra. These proposals will be evaluated based on relevance and feasibility for proceeding further. Before three weeks of completion of course (second week of November), final report of the project should be submitted. Final project presentations (including demonstration) will be scheduled in the third week of November. *Late submission (beyond the due date and time) of homework solutions/project report will result in no credit.*

Midterm/Final Exam: Both midterm and final exam will test primarily your understanding of the material covered in the class. Students will be allowed to carry one sheet of paper (A4 size, written only on one side) to the exam, which can contain important formulas. No programming excercise will be part of exams, but you might be required to write a pseudo code/algorithm. Note that the course material that is covered in the midterm exam will not be part of the final exam.

Honor Principle: *You are welcome to exchange ideas in solving homework problems with your colleagues, but all the work submitted for grading (homework, project, and midterm/final exam) must be your own work (i.e., you must have worked out all details by yourself). Copying computer code or files (including the material on the web) without proper citation is considered as plagiarism.* **Any deviation from this principle will result in failing of the class.**

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[1]Supplementary texts will be used depending on the topic.
[2]Octave is an open source with same capabilities as Matlab (also compatible with Matlab).
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