

**Course:** Math / CS 143M

**Course Title:** Numerical Analysis and Scientific Computing ( Matrices)

**Instructor:** Plamen Koev

**Semester:** Fall 2011

**Time:** MW 7-8:15pm in MH 235

**Office:** MH 312

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**Web page:** [www.math.sjsu.edu/~koev](http://www.math.sjsu.edu/~koev)

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**Prerequisites:** M129A and a programming language course

**Office Hours:** MW 6-7pm or by appointment.

**Midterm:** TBA

**Text:** Fundamentals of Matrix Computations, 3<sup>rd</sup> edition, by David Watkins (Wiley). Alternative books: [An Introduction to Numerical Linear Algebra](#) by Charles Cullen, [Numerical Linear Algebra](#) by Biswa Datta (Brooks\Cole), (PWS) [Numerical Linear Algebra](#) by Lloyd Trefethen and David Bau (SIAM) , [Matrix Computations](#) by Gene Golub and Charles Van Loan (John Hopkins)

**Material Covered :** Selected material from Chapters 1-5 and 7.

**Learning Objectives:** To understand common matrix decompositions, algorithms to construct them and applications of these decompositions; to be able to compare algorithms in terms of efficiency, accuracy and reliability; to be able to apply programming skills to mathematical problems; to interpret numerical results and to understand the limits of numerical accuracy; to be able to write a technical report using good English, mathematics and computer science.

**Languages used:** When I hand out subroutines or discuss code in a specific language I will usually use MATLAB. I will introduce you to MATLAB in class. You may write code in any decent high level language (not Basic). For most assignments it will be a much easier to use MATLAB than a traditional programming language. MATLAB is available on the departmental computers and probably elsewhere in the university. Finally, a student version of Matlab (PC or Mac) is available. Contact Mathworks ([www.mathworks.com](http://www.mathworks.com)) for more information.

**Computer Access (in MH 221):** Please add Math 110L or pay in the department office. Adding Math 110L costs nothing to you if you are a full-time, resident student. During the project we will hold some classes in MH 221.

#### **Grading:**

1 midterm	30%
Final	50%
Homework and assignments	20%

The curve is 90/80/70/60 for A/B/C/D (+/-: top/bottom 3% of range).

You will have at least a week's notice for all assignments. Computing assignments are required in order to pass the course.

**Homework:** Homework will be collected regularly. Each student will be required to take at least one turn grading a set of homework (or share grading if there aren't enough assignments). You automatically get a perfect score on any homework set you grade. If your course grade is in doubt homework and other signs of work will count by helping your grade up to a maximum of 2-3% points in the final grade.

**Cheating:** Cheating on any quiz, exam, or program may result in an F in the course. On programs you can consult with other students on general matters. A copied program is cheating. Also turning in output that is not produced by your program is cheating.

Additional information / requirements please see <http://www.sjsu.edu/math/courses/greensheet>.