APPM 3310: Matrix Methods Course Syllabus Spring 2016

Webpage: [http://tinyurl.com/jhoou6d](http://tinyurl.com/jhoou6d)

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*Course Goals:* To understand the basic concepts of linear algebra; the course will cover the following:

- Solving linear algebraic systems (ch. 1 for 2 weeks),
- Notions of vector spaces and bases (ch. 2 for 2 week)
- Using inner products and norms (ch. 3 for 2 weeks),
- Problem of minimization and least squares approximations (ch. 4 for 1 week),
- Applications of orthogonality (ch. 5 for 2 weeks),
- Linear operators and transformations (ch. 7 for 1 week).
- Eigenvalue Problems and Singular Value Decomposition (ch. 8 for 3 weeks),
- Iterative algorithms (ch. 10 for 2 week)

In addition, to practice rigorous mathematical thinking and writing and to work on a project where the basic concepts are applied.

*Exams:* There will be two midterm exams and a comprehensive final. The midterms will be administered in the evenings on the Wednesday of exam weeks; there will be an in-class review on exam days.

*Homework:* Doing and understanding the homework is very important in this class. There will be weekly homework assignments due on Wednesdays; homeworks due on exam weeks will not be graded. Late homeworks will not be accepted. Your lowest homework score will be dropped. See the course web page for the problems and due dates.

*Project:* A group project (3 students per group) to read, understand and use a paper or papers relevant to the subject of the course. A selection of papers will be provided. A written report will be required. The goals are for you to (i) use the material covered to explore current applications, (ii) gain experience with computational programs, and (iii) practice technical writing skills.

*Grade determination:* Your course grade will be a weighted average of your homework, exam, and project scores. The weighting is as follows:

- Homeworks – 35%
- Exam #1 – 15%
- Exam #2 – 15%
- Project – 15%
- Final exam – 20%

The instructors reserves the right to modify grade distribution for various reasons; for example, if a student has not worked with sufficient independence.

*University policies:* See [http://www.colorado.edu/amath/academics/student-resources/policies](http://www.colorado.edu/amath/academics/student-resources/policies) for the relevant university and department policies.