Mathematics 415

Spring, 2012

Class meets: 12:40 -1:30 MWF in C309 Wells Hall.

Professor:	T. Parker	Office hours:	Monday: 1:30-2:30
Office:	A-346 Wells Hall 353-8493		Wednesday 3-4
	parker@math.msu.edu		Friday 2-3

Class Web page: math.msu.edu/~parker/415.   Bookmark this!

Goals: This is a second course Linear Algebra intended for physics, engineering, statistics, computer science, and mathematics majors (and graduate students).

After calculus, Linear Algebra is the most useful branch of mathematics, with innumerable applications in statistics, computer science, engineering, physics, economics and in mathematics itself. It is a combination of algebra and geometry that is appealing and mathematically "clean": the definitions, theorems and proofs are often simple, illuminating, and are readily translated into powerful computational methods.

Math 415 covers the theory needed to understand a wide range of applications. Numerous specific applications are included.

Prerequisites: A previous Linear Algebra course, or some familiarity with linear algebra.

Textbook: *Applied Linear Algebra* by Lorenzo Sadun.

Recommended download: *Linear Algebra Done Wrong* by S. Treil. A free online book (266 pages) with a clean presentation. Some assignments will come from this text. Download at math.brown.edu/~treil/papers/LADW/book.pdf.

Additional resources: The following textbooks are on reserve in the Mathematics Library:

- *Linear Algebra with Applications* by Steven Leon.

- *Linear Algebra with Applications* by Otto Bretscher.

- Video lectures: Go to ocw.mit.edu/courses/mathematics, select course 18.06 ("Linear Algebra") and click on video lectures. This MIT open online course on Linear Algebra (with Prof. G. Strang) assumes no previous knowledge of linear algebra, so may be useful for review. Prof. Strang's approach emphasizes the applications of linear algebra to numerical analysis.

Evaluation: There will be a 50-minute midterm exam worth 100 points, a 150-point Final Exam, and weekly homework assignments and occasional quizzes worth a total of 250 points. Your scores will be available on ANGEL. At the end of the semester, your total points (out of 500) will be converted to a percentage, and then to a course grade.

250 pts	Homework & quizzes	
100 pts	Hourly Exam	Wednesday, March 14.
150 pts	Final Exam	Thursday May 3, 10 am–noon.

Homework: The homework assignments are the main part of the course. You are encouraged to help each other on homework. During many class meetings, time will be spent answering questions or doing homework problems.

Important dates:

Friday, Jan 13: Online enrollment (including changes to credit/no credit) ends at 8pm.

Monday, Jan 16: No class (M. L. King Day)

Monday - Friday, Jan 16 - 22: All Math enrollment changes (late adds, drop to lower course, section changes) must be done at the Undergraduate Office, A212 Wells Hall.

Friday, Jan 20: Last day to late add a course, change sections within a course, or drop to a lower level course.

Friday, Feb. 3: Last date to drop a course and receive a full refund.

Wednesday, Feb 29: Last day to drop a course without a grade being reported.

March 5–9: Spring Break

Wednesday, March 14: Math 415 Midterm Exam.

Friday, April 27: Last day of classes.

Thursday, May 3, 10 a.m. – 12 noon: Final Exam.

Key to Success: Do *all* the homework problems. *Mathematics is learned by doing problems.* Again, you are encouraged to work with friends on the homework problems. More advise:

- Take complete notes in class. The course will be based mostly on lectures – more than on the textbook.

- Start working on the homework problems the day that they are assigned.

Attendance & Integrity: You are responsible for everything presented in class meetings. If you must miss a class, plan to get notes for that day from a classmate. Don't miss exams. As always, all students are expected to adhere to MSU's policy on academic integrity described in 'General Student Regulations' in the Spartan Life booklet vps.msu.edu/SpLife).