About the course:
The principal topics of the course include vectors, matrices, determinants, linear transformations, eigenvalues and eigenvectors, and selected applications.

Prerequisite:
Math 0220 or equivalent, with a grade of C or better.

Text:
The text for this course is Linear Algebra, A Modern Introduction, 4th Edition by David Poole.

Course Objectives:
Students who complete Math 0280 are expected to have mastered the fundamental ideas of linear algebra and to be able to apply these ideas to a variety of practical problems. More specifically, in Math 0280 you will be expected to:
- explore and learn the core concepts associated with systems of linear equations, manipulation of matrices, linear transformations, orthogonality, and eigenvalues/eigenvectors;
- begin to think abstractly about certain of these topics;
- understand how these ideas can be used to solve problems and compute things.

Homework/quizzes/written assignments:
Each week, you will be assigned some problems to write up and hand in. These assignments will be graded and returned. In addition, you will be provided with a list of practice problems to do, even though they will not be handed in and graded. At the instructor's discretion there may be quizzes or written assignments.

Grades

Your course grade will be determined as follows:

- Two midterm exams: 40% (20 % each)
- Final exam: 40%
- Written assignments/quizzes/homework assignments: 20%

Some sections may deviate slightly from this formula. Any variations will be announced by your instructor at the beginning of the term.

Calculators Policy:
Calculators are NOT allowed on the quizzes, midterm examinations and the final exam.

Final Exam Policy:
All sections will take a departmental final exam at a time and place to be scheduled by the registrar. You MUST attend the final exam.

Final Grade Policy: Your course grade will not exceed your final exam grade by more than one letter grade.

Exam Dates: See the class schedule for the dates of the two midterm exams and the final. The room of the final exam will be announced by your instructor.

Getting Help

Tutoring: Walk in tutoring is available in the Math Assistance Center (MAC) in Room 215 of the O'Hara Student Center. See http://www.mathematics.pitt.edu/about/math-assistance-center
Office Hours: Your instructor will announce the office hours.

Disability Resource Services: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 216 William Pitt Union (412) 624-7890 as early as possible in the term. See http://www.studentaffairs.pitt.edu/drsabout

Academic Integrity:

Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity will incur a minimum sanction of a zero score for the quiz, exam or paper in question. Additional sanctions may be imposed, depending on the severity of the infraction.

On homework, you may work with other students or use library resources, but each student must write up his or her solutions independently. Copying solutions from other students will be considered cheating, and handled accordingly.

Math 0280 Schedule and Practice Problems

Fall, 2014

August 25:
Introduction.
1.1. The Geometry and Algebra of Vectors.
1.1 Problems 1--28
August 27:
1.1.(cont.) The Geometry and Algebra of Vectors
1.1 Problems 1--28
August 29:
1.2. Length and Angle. The Dot Product.
1.2 Problems 1--52.
September 3:
1.2.(cont.) Length and Angle. The Dot Product.
1.3. Lines and Planes.
1.2 Problems 61--67.
1.3 Problems 1--15.
September 5:
1.3. Lines and Planes.
1.3 Problems 18--24.
September 8:
2.1. Introduction to Systems of Linear Equations.
2.1 Problems 1--38.
September 10:
2.2. Direct Methods for Solving Linear Systems.
2.2 Problems 1--18.
September 12:
2.2.(cont.) Direct Methods for Solving Linear Systems.
2.2 Problems 23--46.
September 15:
2.3. Spanning Sets and Linear Independence.
2.3 Problems 1--42.
September 17:
2.3.(cont.) Spanning Sets and Linear Independence.
2.3 Problems 1--42.
September 19:
Chapters 1 and 2 Review. Applications.
September 22:
3.1 Problems 1--22.
September 24:
3.1.(cont.) Matrix Operations.
3.2. Matrix Algebra.
3.1 Problems 1--22.
3.2 Problems 1--28.
September 26:
3.2. Matrix Algebra.
3.2 Problems 1--28.
September 29:
3.3. The Inverse of a Matrix
3.3 Problems 1--40.
October 1:
3.3.(cont.) The Inverse of a Matrix
3.3 Problems 47--59.
October 3:
Review.
October 6:
Midterm Exam 1
October 8:
3.5. Subspaces, Basis, Dimension, and Rank.
3.5 Problems 1--48.
October 10:
3.5.(cont.) Subspaces, Basis, Dimension, and Rank.
3.5 Problems 1--48.
October 14:
3.5.(cont.) Subspaces, Basis, Dimension, and Rank.
3.5 Problems 1--48.
October 15:
3.6. Introduction to Linear Transformations.
3.6 Problems 1--45.
October 17:
3.6.(cont.) Introduction to Linear Transformations.
3.6 Problems 1--45.
October 20:
Chapter 3 Review. Applications.

October 22:
4.1. Introduction to Eigenvalues and Eigenvectors.
4.1 Problems 1--18.

October 24:
4.1. (cont.) Intro. to Eigenvalues and Eigenvectors.
4.1 Problems 1--18.

October 27:
4.2. Determinants.
4.2 Problems 1--52.

October 29:
4.2. (cont.) Determinants.
4.2 Problems 57--65.

October 31:
4.3. Eigenvalues and Eigenvectors of n x n Matrices
4.3 Problems 1--18.

November 3:
4.3. (cont.) Eigenvalues and Eigenvectors of n x n Matrices
4.3 Problems 1--18.

November 5:
Review.

November 7:
Midterm Exam 2.

November 10:
4.4. Similarity and Diagonalization.
4.4 Problems 1--45.

November 12:
4.4. (cont.) Similarity and Diagonalization.
4.4 Problems 1--45.

November 14:
5.1. Orthogonality.
5.1 Problems 1--21.

November 17:
5.1. (cont.) Orthogonality.
5.2. Orthogonal complements and Orthogonal Projections.
5.1 Problems 1--21.

November 19:
5.2. (cont.) Orthogonal complements and Orthogonal Projections.
5.2 Problems 1--22.

November 21:
5.3. The Gram-Schmidt Process.
5.3 Problems 1--14.

November 24:
5.4. Orthogonal Diagonalization of Symmetric Matrices.
5.4 Problems 1--24.

December 1:
Chapters 4 and 5 Review. Applications.

December 3 & 5:
Review

December 8-13, Finals week
Final exam for all sections