Matrix Computations*

Course Title: Matrix Computations*
Course prerequisites: Optional course
Class hour: 32
Department: Department of Mathematics
Students: **14 级信息与计算科学**(全英文)

Course description

Matrix Computation is more exciting now than at almost any time in the past. Its applications continue to spread to more and more fields. Largely due to the computer revolution of the last half century, matrix Computation has risen to a role of prominence in the mathematical curriculum rivaling that of calculus. Modern software has also made it possible to dramatically improve the way the course is taught. This course is an introduction to Linear Algebra. It also introduces the basics of abstract mathematics as well as a software package that is valuable both for learning and using linear algebra. The main development of the course will follow the text

Course goals.

- To provide students with a good understanding of the concepts and methods of linear algebra, described in detail in the syllabus.
- To help the students develop the ability to solve problems using linear algebra.
- To connect linear algebra to other fields both within and without mathematics.
- To develop abstract and critical reasoning by studying logical proofs and the axiomatic method as applied to linear algebra.

Textbook

Numerical Linear Algebra with Applications, First Edition 2015, William Ford, University of the Pacific.

Grades

Your course grade will be determined using the following formula:

30% Class Presentation
30% Programming
40% Final Manuscript

Topics

This is a 1-semester course in matrix computation for students who have completed two semesters of calculus. It covers Matrices, Linear Equations, Subspaces, Determinants, Eigenvalues and Eigenvectors, Orthogonal Vectors and Matrices. We will follow the textbook and aim to cover in full or in part the following chapters: