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TA’s Office Hours: 17:00–18:00 on Mondays and 18:00–19:00 on Wednesdays

Textbook:

Good References :
1. Elementary Linear Algebra by Howard Anton, John Wiley & Sons, Inc.

Grading Policy:
1. Attendance and in-class recitations, 8% (extra).
2. Written homeworks, 15%. Hand in your homework every Thursday right before class. Please do not plagiarize others’ work.
3. Four Matlab homeworks, 5%. The problems will be posted on my Web.
4. Two 50-minute quizzes, 15% each.
5. Midterm exam and final exam, 25% each.

This course Linear Algebra
● is a mathematics course.
● is useful and fundamental to CSIE (and many other discipline) students.
● emphasizes both computations and concepts.
● asks you to use a popular matrix-based mathematical package called Matlab. （請使用計網中心電腦教室）
● guides you to read through an English textbook.
● requires hard work.
**Syllabus:** (The number in parentheses indicates the estimated teaching hours.)

(12) 1. Linear Equations
- To understand the basic terminologies and notations of matrices and systems of linear equations, in the forms of vector equation and matrix equation.
- Solving a system of linear equations with the Gaussian elimination: reducing a matrix to its echelon form.
- To interpret a system of linear equations in various ways.
- First exposure to key concepts such as linear independence and linear transformation. (Quiz #1)

(8) 2. Matrix Algebra
- To learn basic matrix arithmetic operations: addition, subtraction, multiplication power, transpose, and inverse.
- To summarize the concepts for systems of $n$ linear equations in $n$ unknowns. (Midterm exam)

(12) 3. Vector Spaces
- Introduction to vector spaces.
- Fundamental subspaces of a matrix: column space, row space, and null space.
- Basis and dimension of a vector space. (Quiz #2)

(8) 4. Eigenvalues and Eigenvectors
- To find the eigenvalues and eigenvectors of a matrix.
- Diagonalization of a matrix (linear transformation).
- To view eigenbases in the context of simplifying (decorrelating) linear transformations.

(8) 5. Orthogonality and Inner-Product Spaces
- To introduce inner product of vectors, and thus the geometric concepts of length, distance, and angle (perpendicularity).
- To be familiar with the use of orthogonal bases.
- Least-Squares approximation. (Final exam)