Shenyang Aerospace University

Linear Algebra

COURSE SYLLABUS

Spring Semester, 2015-2016

INSTRUCTOR: LIN LIN

OFFICE:	Block A, Room 403
OFFICE HOURS:	M: 10:20 – 11:20 am , 15:30-16:30 p.m.
OFFICE PHONE:	89723486
E-MAIL ADDRESS:	linear_algebra_sau@163.com (password:linear_algebra)
CLASS HOURS:	M: 13:30 – 15:10 p.m. A406 & TH: 15:30 – 17:10 p.m. A406
QQ GROUP	416098319

A. DESCRIPTION

Linear algebra is two things in one: a general methodology for solving linear systems, and a beautiful abstract structure underlying much of mathematics and the sciences. This course will try to strike a balance between both. We will follow the book of linear algebra with applications, which does a superb job in describing the mathematical structure of linear algebra, and complement it with applications and computing.

B. ORGANIZATION

There are 40 hours for the whole course. In some important sections, some exercises or homeworks will be assigned.

C. COURSE OBJECTIVES

This is a course in Algebra and focuses on matrices and vector space. The main topics covered will be a review of linear system of equations, matrix, and vector space. The main goals of the course will be:
   • Gaining an understanding of matrices and its implications
   • Knowing what the vector space is and its applications

D. COURSE TOPICS

The course will cover the following topics:

   1. Matrices and Systems of Equations
   2. Determinant
   3. Vector Space
   4. Linear Transformation
   5. Orthogonality
   6. Eigenvalues

E. TEXT AND REQUIRED SUPPLIES

Required text: *Linear Algebra(8th Edition)* by Steven J. Leon

F. GRADING PLAN

Coursework will be weighted as follows:

1	Attendance & Late	20%
2	Quizzes	10%
3	Homework	10%
4	Mid-term Exam	20%
5	Final exam	40%
	Total	100%

ATTENDANCE:

Attendance will be graded as follows:

Late or ask for leave once	-0.5 point
Absence once	-1.5 points
Six or more absences	Failed

Absences for which a medical or court excuse is provided (professional letterhead required) will be recorded but not figured in the attendance grade. Likewise, one absence for which advance notice is given by phone or in person will not be figured in the attendance grade. Any significant tardy or early departure from class will be figured as a absence. Also, anyone who has more than five class-long, unexcused absences will be regarded as failed of the course.

QUIZZES:

Quizzes will be given after finishing some chapters during the last 40 minutes of the classes. Missed quizzes may NOT be made up. Cell phones must be turned off during a quiz.

HOMEWORKS:

Homework is very important to this course and much of your understanding of the concepts will come from working out the problems and reading the text. Homework from the text will be assigned almost every class. You will be most successful if you work on your assigned homework as soon as possible. The material will be fresh and you will prepare yourself for subsequent classes. If you miss a class it is your responsibility to get the homework assignment. During the term, you have to finish at least 6 homeworks.
Late homework: Homework is due by the beginning of the class on its due date. Any homework not turned in by this time is considered late. Homework turned in late will NOT receive credit. Consistently turning in late homework will have a very detrimental effect on your grade.

MIDTERM EXAM:

This is a 2-hour closed book midterm examination. It will be given at the middle of the course.

FINAL EXAM:

This is also a 2-hour closed book final examination. It will be given at the time shown at the end of the schedule that follows.

GENERAL:
Do remember to keep all homework, quizzes, and tests returned to you so that any discrepancies can be easily and fairly straightened out. Except in cases of actual error, final grades are permanent.

G. CLASSROOM RULES OF CONDUCT

1. Come to class on time.
2. Bring necessary materials for the lessens.
3. Talk only when permitted and raise hand to ask questions.
4. No food or drink in the classroom.
5. No cellphone call, no earphone and do not play with your cellphone   or MP3, MP4.
6. Finish your task in time and do not cheat.
7. Use polite speech and body language

J. SUGGESTIONS FOR SUCCESS

To succeed in this course it is very important to attend class, read the book and complete with understanding your homework and projects. I encourage you to attend office hours and have regular discussions with classmates.

It is a standard academic rule of thumb to spend two to three hours out of class for every hour in class while studying mathematics or science. This is a 40 hours mathematics course and you should expect to spend 8 to 12 hours per week outside of class studying and working on the content of Linear Algebra. Set up a regular schedule for yourself and stick with it. Success in mathematics is directly linked to effort and regular practice.

TENTATIVE SCHEDULE

The following is our plan for this course, but maybe it is not the final plan. I may adjust it.

week	beginning	topics
2	Mar. 7	Introduction, Systems of linear equations,
2	Mar. 10	Definition of matrix.
3	Mar. 14	Row echelon form
3	Mar. 17	Matrix algebra
4	Mar. 21	Elementary matrices.
4	Mar. 24	The determinant of a matrix.
5	Mar. 28	Properties of determinants; Cramer's rule.
5	Mar.31	Summary

6	Apr. 7	Vector spaces; Subspaces 1.
7	Apr. 11	Subspaces 2, Linear independence.
7	Apr. 14	Basis and dimension Change of basis.
8	Apr. 18	Row space and column space.
8	Apr. 21	Linear Transformation
9	Apr. 25	Summary
9	Apr. 28	The scalar product in R^n
10	May. 5	Orthogonal subspaces.
11	May. 9	Inner product spaces; Orthonormal sets.
11	May. 12	The Gram-Schmidt orthogonalization process.
12	May. 16	Eigenvalues and eigenvectors; Diagonalization.
12	May. 19	General Revision