Collaborative Bachelor's Degree Program of Fire Protection and Safety Engineering Technology

between Southwest Jiaotong University and Oklahoma State University, U.S.A.

Syllabus

Course: **2475 Linear Algebra**

Semester: **Fall 2020**

Lecture: **Web**

Instructor: **Lukun Zheng**

Contact: **Lukun.zheng@wku.edu**

Credits： **3**

Course code: FGEE001612

Course Description:

Systems of linear equations, matrix algebra, vector spaces, inner product spaces, linear transformations, eigenvectors, quadratic forms.

Prerequisites:

Calculus I: C or above.

Learning Objectives:

1. Be able to solve systems of linear equations

2. Be able to prove fundamental theorems about matrices, n-dimensional space, linear transformations, vector spaces, and inner product spaces

3. Be able to apply matrix methods to solve certain practical problems

4. Be able to analyze linear transformations and sets of vectors in R^n.

5. Understand the concepts of one-to-one, onto, spanning, and linear independence.

6. Be able to compute determinants, inverses, eigenvalues and eigenvectors of n × n matrices.

7. Understand the concepts of quadratic forms and its related properties.

Course Learning Outcomes:

1. Solve systems of linear equations with elementary row operations and master the solvability discrimination criteria.

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2. Understand major types of matrices and their properties, master matrix operations skills.

3. Develop matrix methods to solve real-life problems.

4. Compute determinants, inverses, eigenvalues and eigenvectors of n × n matrices.

5. Conduct linear transformations and analyze the relationship among a set of vectors in R^n.

6. Understand the concepts of quadratic forms and its related properties.

Office Hours:

M: 10:30 am-11:30 am

Required Texts:

Applied Linear Algebra and Matrix Analysis-2018-2nd Edition-By Thomas S. Shores, Springer.

Attendance and late arrival policy:

Attendance to all class sessions is necessary. It is important to arrive on time and remain in class. Should absences occur, the student will be responsible for bringing in a valid excuse.

I will take the attendance for every class meeting. It is fine to miss one attendance checking without valid excuse. However, 10 points will be deducted from your final exam grade for every additional absence without legitimate excuse.

If you arrive in class more than 10 minutes late or leave the class more than 10 minutes early, it will count as half of an absence. That is, if it happens twice, it will be counted as an absence, 10 points will be deducted from your final exam

Grading Policy:

Evaluation:

Homework	20%
Quiz	20 %
Exam 1	20 %
Exam 2	20 %
Final Exam	20 %

Grade Scale:

A: 90 - 100

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B: 80 - 89

C: 70 - 79

D: 60 - 69

F: 59 or below

Note: Please consult the document "SWJTU-OSU Joint Program Final Course Gradebook: Instructions for Completion" for how to submit final course grades.

Academic Misconduct:

"Students who commit any act of academic dishonesty may receive from the instructor a failing grade in that portion of the coursework in which the act is detected or a failing grade in the course without possibility of withdrawal." Although students may help each other on homework assignments, individual work is required on quizzes and exams.

Other things I would like to specify:

Homework: Completion of the homework problems is critical to understanding the material and also for doing well in the course. You are expected to work on the homework problems and we will go through selected homework problems in class.

Homework Policies:

- Late work: lose 20% of the final score per day after the due date.
- Every homework assignment worth 30 points.
- Your homework grade is calculated using the percentage of your average homework grades out of 30.

Quizzes: Quizzes will be given in the classroom for almost every class. The quizzes are usually at the end of the class sessions. The problems in the quiz can be multiple choice questions or open questions. <u>You will have an opportunity to take a make-up quiz only when yours is a legitimate emergence with written proofs.</u>

Quiz Policies:

- Use of disallowed materials (including any form of communication with classmates or looking at a classmate's work) during exams will not be tolerated. This will result in a 0 on the exam for all involved and possible failure of the course.
- Each quiz worth 10 points.
- Your quiz grade is calculated using the percentage of your average quiz grades out of 10.
- We will have one quiz per day.

Exams: Material for the exams will be based on the readings in textbook, homework,

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practice problems, and in-class activities

Exam Policies:

- Use of disallowed materials (including any form of communication with classmates or looking at a classmate's work) during exams will not be tolerated. This will result in a 0 on the exam for all involved and possible failure of the course.
- The exams during the semester will consist of the materials covered since the previous exam. However, the final exam will be comprehensive. You will have an opportunity to take a make-up exam only for the in-class exams only when yours is a legitimate emergence with written proofs.
- Cell phones must be placed out of sight during exams.   You will receive one warning during the semester for noncompliance.   Two points will be deducted from your overall average for every occurrence thereafter.   Note: This means that you may not use your cell phone as your calculator.

General Statement

This class will contain material that builds on previous material covered, so DO NOT FALL BEHIND! If you miss a class, get the notes immediately. Understanding problems that I work in class and being able to work problems on your own are two completely different things. If you do not do the homework, you will find the exams very difficult. If you are having trouble with a topic covered, come see me as soon as problems arise (i.e., not the day before the exam). Office hours are for you, so do not hesitate to come see me (or make an appointment).

Remark:
Instructor reserves the rights to make changes during the semester if it is needed.