SICHUAN UNIVERSITY

Introduction to Linear Algebra

Course Number:	MTH 201	**Term:**	Summer, 2021
Instructor:	TBA	**Email:**	
Contact Hours:	60	**Meeting Times:**	TBA
Awarded Credits:	4.0		

Course Description:

This course offers a rigorous treatment of linear algebra, including vector spaces, systems of linear equations, bases, linear independence, matrices, determinants, eigenvalues, inner products, quadratic forms, and canonical forms of matrices. Students will be exposed to linear transformations and will apply these concepts to linear differential or difference equations.

Learning Objectives:

Upon successful completion of this course, students will be prepared to:

1. Solve systems of linear equations
2. Perform matrix algebra
3. Analyze the relationship between linear transformations and vector spaces
4. Find eigenvalues and eigenvectors of real matrices
5. Calculate determinants
6. Explain the concept of orthogonality

Required Textbook and Course Materials:

Text:	Introduction to Linear Algebra
Author:	Gilbert Strang. Wellesley - Cambridge Press, 2016
Edition:	5th
ISBN:	978-0980232776

Language of Instruction:

This course is taught entirely in English, including lectures, homework, assignments and examinations. Teaching assistants will be fluent in both English and Mandarin.

Course Prerequisites:

MTH111 Calculus I and MTH 211 Calculus II

University Policies

Class Format

In Person. Course activities, discussions, assignments and resources will be made available at the start of and during the course.

Attendance, Participation, and Deliverables

Courses are very intensive and in order to be successful, students need to attend every class. Attendance is required for all lectures and class activities. Class participation is expected from every student and form a significant portion of the final course grade

All course deliverables (homework assignments and tests) are due on time as assigned. This course includes *no* make-ups, postponements or additional assignments, except for verified medical emergencies. If you miss an exam/assignment due to a non-sanctioned absence, your score on that exam/assignment will be zero.

Academic Dishonesty

All cases of academic dishonesty will be diligently pursued. Academic dishonesty includes representing the work of another as one's own work or cheating by any means. Academic dishonesty also includes aiding, abetting, concealing or attempting such activity. The penalty is automatic failure of the course and possible suspension from the university.

Grading Scale

Grading Scale (%)

97 - 100	A+	77 – 79	C+
93 - 96	A	73 – 76	C
90 - 92	A-	70 – 72	C-
87 - 89	B+	67 – 69	D+
83 - 86	B	63 – 66	D
80 - 82	B-	60 – 62	D-
		0 - 59	F

Professor- and Course-Specific Policies (*Tentative*)

Exams:

No make-ups will be given after the exam. The use of the textbook or any other written reference is not allowed during the exams. Calculators are allowed. The purpose of the exams is to test your understanding of key concepts from the course lectures and materials.

Homework:

Assignments will be listed at the beginning of the course. The purpose is to prepare you for the exams. The homework is a very important part of the course. No matter how well you think you understand the material presented in class, you won't really learn it until you do the problems

Grade Components:

Attendance	10%
Homework	20%
Quizzes	20%
Midterm Exam	25%
Final Exam	25%
Total	**100%**

Course Schedule (*Tentative*)

Module	Topics
1	Vectors and Linear Combinations, Lengths and Dot Products, Matrices Solutions of Linear Systems of Equations, Gaussian Elimination Properties of Matrix Operations, The inverse of a matrix, LU-Factorization
2	Vector Spaces and Subspaces, Column and Null Spaces Linear Independence, Basis, Dimension, The Rank of a Matrix Review for Mid-term
3	Orthogonality, Coordinates and Changes of Basis, Orthonormal Bases in R^n, Projections and Least Squares Approximations Determinants, Cofactor Expansion Cramer's Rule
4	Eigenvalues and Eigenvectors Diagonalization of Symmetric Matrices QR-Factorization
5	Singular Value Decomposition (SVD) and Applications Definition of linear transformations, The matrix of a linear transformation Final Exam