MAT 211 – Introduction to Linear Algebra

Spring 2022

Section:	L 01 (55530)
Time:	Tu & Th 4:45 pm – 6:05 pm
Location:	Earth & Space Sciences Building (ESS) Room 079
Course Description:	Introduction to the theory of linear algebra with some applications; vectors, vector spaces, bases and dimension, applications to geometry, linear transformations and rank, eigenvalues and eigenvectors, determinants and inner products. May not be taken for credit in addition to AMS 210. The Tentative Schedule and the Major Topics to be covered are at the end of the syllabus.
Prerequisite:	C or higher in AMS 151 or MAT 131 or 141 or co-registration in MAT 126 or level 7 on the mathematics placement examination.
SBC:	STEM+
Credits:	3
Textbook:	Otto Bretscher, Linear Algebra with Applications, Fifth edition
Blackboard:	This is the Stony Brook University class management system; the website link is here. Your homework assignments, as well as all grades will be posted there. Letter grades for the course are posted in the "Solar System" at the end of the course. Announcements will occasionally be posted in Blackboard. You should receive email notifications whenever this occurs.

Instructor:	Supun Samarakoon
Email:	Supun.Samarakoon@stonybrook.edu
Office:	Math Tower 4–104
Office Hours:	Tu 3:00 pm – 4:00 pm W 1:00 pm – 2:00 pm By appointment
MLC Hours:	Tu 7:00 pm – 8:00 pm via Zoom

Grader:	Yeorgia Kafkoulis
Email:	Yeorgia.Kafkoulis@stonybrook.edu
Office Hours:	Tu 1:00 pm – 2:00 pm via Zoom
MLC Hours:	M 9:30 am – 11:30 am via Zoom

Grading Policy:

Homework	20%
Midterm I	25%
Midterm II	25%
Final Exam	30%

Homework: Homework will be assigned on a weekly basis and will be posted on the Blackboard. No late homework will be accepted. If you cannot handover your homework, then you must contact your instructor and arrange for your homework to be turned in before the deadline.

Your lowest score for homework will be dropped. You may work with other students on the homework, but you must hand in your own solutions. Stony Brook policy prohibits you from directly copying online sources. Your solutions will be judged for clarity of formulation in addition to having the correct idea.

Exams: Two midterms will be given during the semester in class and a comprehensive final exam will be given during the final examination period. No books, notes, calculators, or other electronic devices may be used on the exams. Exams will be in-person (unless otherwise instructed by the university). Our exams are scheduled as follows.

Exam	**Date**	**Time**	**Location**
Midterm I	March 03	4:45 pm – 6:05 pm	ESS 079
Midterm II	April 14	4:45 pm – 6:05 pm	ESS 079
Final Exam	May 11	11:15 am – 1:45 pm	ESS 079

Make–up Exams: No alternative date will be given for the midterms or the final exam. If a student has a valid documented reason, such as illness or religious holiday, during examination times and informs the instructor, beforehand, then the student is permitted to schedule a makeup examination with no penalty. A missed midterm must be made up within 7 days of the midterm. Students must be prepared to verify the reason for requesting the makeup by providing the proper document(s) upon request. Conflicts with other exams, personal business such as travel, employment, weddings, graduations, or attendance at public events such as concerts and sporting events are not valid excuses. Nor is forgetting the date, time or room of an examination a valid excuse. If a student misses an exam, does not have a valid documented excuse, and does not inform the instructor, then the student gets 0 points for the exam.

Student Accessibility Support Center Statement: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: https://ehs.stonybrook.edu//programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities and search Fire Safety and Evacuation and Disabilities.

Academic Integrity Statement: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school–specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook. Until/unless the latest COVID guidance is explicitly amended by SBU, during Spring 2022 "disruptive behavior" will include refusal to wear a mask during classes.

Tentative Schedule:

Week 01	1/24 – 1/28	1.1, 1.2
Week 02	1/31 – 2/04	1.3, 2.1
Week 03	2/07 – 2/11	2.2, 2.3
Week 04	2/14 – 2/18	2.4, 3.1
Week 05	2/21 – 2/25	3.2, 3.3
Week 06	2/28 – 3/04	3.4, Midterm I
Week 07	3/07 – 3/11	4.1, 4.2
Week 08	3/14 – 3/18	No Classes (Spring Recess)
Week 09	3/21 – 3/25	4.3, 5.1, 5.2
Week 10	3/28 – 4/01	5.3, 5.4
Week 11	4/04 – 4/08	5.5, 6.1
Week 12	4/11 – 4/15	6.2, Midterm II
Week 13	4/18 – 4/22	6.3, 7.1
Week 14	4/25 – 4/29	7.2, 7.3
Week 15	5/02 – 5/06	Review
Week 16	5/09 – 5/13	Final Exam

Major Topics:

Systems of Linear Equations
Gauss Elimination and Row Echelon Form
Vectors and Matrices
Linear Transformations
Matrix Multiplication, Inverse Matrices
Image and Kernel of a Linear Transformation
Subspaces of $\mathbb{R}^n$
Linear Independence, Basis, and Dimension
Coordinates
Inner Product Spaces
Projections
Orthonormal Bases and Gram-Schmidt Orthogonalization
Orthogonal Transformations Nad Matrices
Determinants
Eigenvalues and Eigenvectors
Diagonalization