MATH 1107 A - Linear Algebra I – Summer 2022

Basic Information:

Course Instructor: Dr. Tushar Bag
Email: tusharbag@cunet.carleton.ca
Course Webpage: All course material will be made available through Brightspace.

Class Schedule:

Class Times:	Monday & Wednesday	18:35 - 19:55	Azrieli Theatre 101
Tutorial Times:	Wednesday	17:35 - 18:25	Mackenzie Building 4499

Office Hours:

Instructor (From May 5)	Teaching Assistant (From May 12)
XXXX and XXX XX:00 - XX:00 by appointment	XXXX XX:00 - XX:00

Course Information:

- **Prerequisites:** Ontario Grade 12 Mathematics of Data Management; or Ontario Grade 12 Mathematics: Advanced Functions, or MATH 0005, or equivalent, or permission of the School of Mathematics and Statistics.
- **Textbook:** Linear Algebra with Applications, by Keith W. Nicholson, Lyryx Learning Inc., open edition 2021 A, available at here.

Assessment:

- **Tests (60%):** There will be six tests for this course XXX. There are no extensions in the quizzes, so be sure to manage your time. Most of the questions will be similar to the "Assignment" which will be given after each chapter, so it will be very helpful to work on the questions to prepare for the test.
- **Final Exam (40%):** The final exam will be a three-hour exam to be held during the exam period set by Carleton University. The questions will be similar to those seen on the assignments, quizzes, and additional practice.

  The final exam and the texts will be closed book, and you are permitted to use a non-programmable calculator. You are not permitted to discuss the exam questions with anyone(other students, tutors, web forums, etc.).

Policies:

- **Plagiarism:** Plagiarism is a specific matter of Academic Integrity. Plagiarism includes reproducing or paraphrasing portions of someone else's material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. In mathematics, an answer can not be plagiarized, but the presentation of its solution can! Thus, copying answers from fellow students, online posts, or online calculators (such as Wolfram, Symbolab, etc.) is strictly prohibited.

- **Academic Integrity:** All tests, assignments, quizzes, and exams are to be done independently. Any instance of suspected cheating or plagiarism will not be tolerated. Suspected cheating will be reported to the Dean, according to the policies stated in General Regulations. For more information, please consult here.

- **Deferrals, Petitions and Appeals:** Students are expected to be available for the duration of a course including the examination period. Dates and deadlines are made available to students in the Carleton University Undergraduate Calendar well in advance of registration. For more information, please consult here.

- **Pregnancy or Religious Obligation:** Contact the instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see here.

- **Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally scheduled exam. For more information, see here.

Extra Help Options:

- **Tutorial Centre:** The tutorial centre is a drop in centre where you can work with a TA to answer your questions/work on problems. This term, the Tutorial Centre will be online and found in Brightspace, please see here.

- **Math & Stat-Learning Assistance Program (MS-LAP):** Online support is available for this course through MS-LAP. You should automatically be registered in MS-LAP via Brightspace. You have access to online tutorial videos free of charge. For more information and tutorials on how to access MS-LAP, please see here.

Textbook Content: We will cover the following topics from the textbook:

1.1 Solutions and Elementary Operations
1.2 Gaussian Elimination
1.3 Homogeneous Equations
2.1 Matrix Addition, Scalar Multiplication, and Transposition
2.2 Matrix-Vector Multiplication
2.3 Composition and Matrix Multiplication
2.4 Matrix Inverses
2.5 Elementary Matrices
2.6 Linear Transformations
3.1 The Cofactor Expansion
3.2 Determinants and Matrix Inverses
3.3 Diagonalization and Eigenvalues
4.1 Vectors and Lines
5.1 Subspaces and Spanning
5.2 Independence and Dimension
5.3 Orthogonality
5.4 Rank of a Matrix
5.5 Similarity and Diagonalization
6.1 Examples and Basic Properties of Vector spaces
6.2 Subspaces and Spanning Sets
6.3 Linear Independence and Dimension
6.4 Finite Dimensional Spaces
7.1 Examples and Elementary Properties
7.2 Kernel and Image of a Linear Transformation
7.3 Isomorphisms and Composition