DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES UNIVERSITY OF TORONTO MISSISSAUGA

MAT223H5F LEC0101 Linear Algebra I Course Outline - Fall 2019

Class Location & Time Mon, 12:00 PM - 01:00 PM DV 2080

Thu, 01:00 PM - 03:00 PM DV 2082 Thu, 07:00 PM - 08:00 PM ZZ TBA

Instructor Elisheva (Adina) Gamse

Office Location
Office Hours

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Course Description

Systems of linear equations, matrix algebra, determinants. Vector geometry in R² and R³. Complex numbers. Rⁿ: subspaces, linear independence, bases, dimension, column spaces, null spaces, rank and dimension formula. Orthogonality, orthonormal sets, Gram-Schmidt orthogonalization process, least square approximation. Linear transformations from Rⁿ to R^m. The determinant, classical adjoint, Cramer's rule. Eigenvalues, eigenvectors, eigenspaces, diagonalization. Function spaces and applications to a system of linear differential equations. The real and complex number fields. [39L, 12T]

Prerequisite: Grade 12 Advanced Functions (MHF4U), (Grade 12 Calculus and Vectors (MCV4U)/MAT102H5).

Exclusion: MAT223H1, MAT188H1, MATA23H3 (SCI)

Distribution Requirement: SCI

Students who lack a pre/co-requisite can be removed at any time unless they have received an explicit waiver from the department. The waiver form can be downloaded from here.

Textbooks and Other Materials

Weekly readings will come from notes posted on the course website. These notes are your primary resource. The following textbook serves as an additional resource.

Linear Algebra with Applications, Open Edition, by Nicholson. This book is an "Open Educational Resource" available for free download at https://lyryx.com/products/mathematics/linear-algebra-applications/.

Assessment and Deadlines

Type	Description	Due Date	Weight
Assignment	8 homework assignments	On-going	8%
Quiz	8 in-tutorial quizzes	On-going	2%
Term Test		2019-10-03	15%
Term Test		2019-11-07	15%
Term Test		2019-11-28	15%
Final Exam		TBA	43%

Other	Pre-Class Readiness Assessment	On-going	2%
		Total	100%

More Details for Assessment and Deadlines

Assignments

- There will be 8 assignments in this course (one per week, except Test weeks).
- They are due each Saturday during the term before 11:59pm (i.e. just before midnight).
- Assignments are to be submitted online, through Quercus, in pdf format.

Tutorial Quizzes

- There will be 8 in-tutorial quizzes in this course (every week while tutorials are running, except Test weeks).
- They will take place in your registered TUT section (you will receive 0 points for writing it in a different TUT section!)

Term Tests:

There will be three tests. Tests take place on Thursdays 19:00-20:00, on the following dates:

Thursday, October 3 Thursday, November 7 Thursday, November 28

By registering in this course, you are confirming that you will be available (barring unforeseen circumstances) to write these three tests 19:00-20:00 on the dates above.

If you cannot show up for a tests because of illness or any other special reason, you should declare your absence on ROSI and submit your documentation *online* via the "Note Submission" link on the course page, within one week of the test. Please use the relevant forms for your documentation. For medical notes, you MUST use the official **UTM Verification of Illness or Injury** form, which can be downloaded from the course website. Please keep a copy of the form for your own records.

The marking scheme will be adjusted as follows for students who have missed a test because of illness or any other (approved) legitimate reason.

One missed test: Two tests at 20%, final exam at 48%. Two missed tests: One test at 25%, final exam at 63%.

Three missed tests: If at some point you anticipate missing all three tests, you should come speak to the coordinator.

Penalties for Lateness

There are no make-up assignments, quizzes or tests. In particular, by registering in this course, you are confirming that you are available TH 19:00-20:00 on each of the three term test dates.

Late assignments will not accepted.

Technical issues will *not* be accepted as an excuse for not completing an assignment, or for submitting it late, or for submitting a file that cannot be opened/read etc. Assignment submissions sent by email or *will be ignored*, as will emails asking for technical help using Quercus, or for converting a file to pdf, etc. Complete your assignment at least a little early just in case you run into technical issues (wifi not working, computer ran out of battery, etc etc).

Procedures and Rules

Missed Term Work

If you cannot show up for a tests because of illness or any other special reason, you should declare your absence on ROSI and

submit your documentation *online* via the "Note Submission" link on the course page, within one week of the test. Please use the relevant forms for your documentation. For medical notes, you MUST use the official **UTM Verification of Illness or Injury** form, which can be downloaded from: http://www.illnessverification.utoronto.ca/index.php

If you have a disability for which you require academic accomodation (e.g. note-taking, extra test time, large font printing etc), please register with Accessibility Services: http://www.utm.utoronto.ca/access

Missed Final Exam

Students who cannot write a final examination due to illness or other serious causes must file an<u>online petition</u> within 72 hours of the missed examination. Original supporting documentation must also be submitted to the Office of the Registrar within 72 hours of the missed exam. Late petitions will NOT be considered. If illness is cited as the reason for a deferred exam request, a U of T Verification of Student Illness or Injury Form must show that you were examined and diagnosed at the time of illness and on the date of the exam, or by the day after at the latest. Students must also record their absence on ACORN on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of \$70 is required for each examination approved.

Academic Integrity

Honesty and fairness are fundamental to the University of Toronto's mission. Plagiarism is a form of academic fraud and is treated very seriously. The work that you submit must be your own and cannot contain anyone elses work or ideas without proper attribution. You are expected to read the handout How not to plagiarize (http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize) and to be familiar with the Code of behaviour on academic matters, which is linked from the UTM calendar under the link Codes and policies.

Final Exam Information

Duration: 3 hours Aids Permitted: None

Additional Information

Please see the syllabus posted on the course page for more detailed information about the course, including a week-by-week course outline.

Last Date to drop course from Academic Record and GPA is November 7, 2019.