

**DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES  
UNIVERSITY OF TORONTO MISSISSAUGA**

**MAT224H5S LEC0101  
Linear Algebra II  
Course Outline - Winter 2014**

<b>Class Location &amp; Time</b>	Tue, 04:00 PM - 06:00 PM IB 245 Thu, 04:00 PM - 05:00 PM IB 345
<b>Instructor</b>	Jacopo De Simoi
<b>Office Location</b>	DV-3297
<b>Office Hours</b>	Tue, 03:00 PM - 04:00 PM and Thu, 03:00 PM - 04:00 PM
<b>Telephone</b>	905-569-4630
<b>E-mail Address</b>	<a href="mailto:jacopods@math.utoronto.ca">jacopods@math.utoronto.ca</a>
<b>Course Web Site</b>	<a href="https://portal.utoronto.ca/">https://portal.utoronto.ca/</a>
<b>Teaching Assistant</b>	Nayara Badaro
<b>E-mail Address</b>	<a href="mailto:n.badaro@mail.utoronto.ca">n.badaro@mail.utoronto.ca</a>
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## Course Description

Abstract vector spaces: subspaces, dimension theory. Linear mappings: kernel, image, dimension theorem, isomorphisms, matrix of a linear transformation. Change of basis, invariant subspaces, direct sums, cyclic subspaces, Cayley-Hamilton theorem. Inner product spaces, orthogonal transformations, orthogonal diagonalization, quadratic forms, positive definite matrices. Complex operators: Hermitian, unitary and normal. Spectral Theorem. Isometries of  $\mathbb{R}^2$  and  $\mathbb{R}^3$ . [36L,12T]

*Prerequisite:* MAT102H5, 223H5

*Exclusion:* MAT248Y5 (SCI)

*Distribution Requirement:* SCI

Students who lack a pre/co-requisite can be removed at any time unless received explicit waiver from department.

## Textbooks and Other Materials

David C. Lay, Linear Algebra and its Applications, 4th edition.

- You may use the 3rd edition for a reference text if you have it available. However, be warned that problem sets are different in the 4th edition, so you will not be able to use the 3rd edition for written homework assignments.
- The website <http://www.coursesmart.com/IR/3710068/9780321780218> gives you the opportunity to purchase an online version of the book.
- We will cover a small number of topics in this course that do not appear in the textbook (or that do not appear in much detail). Supplemental material for these topics will be made available through the course website.

## Assessment and Deadlines

Type	Description	Due Date	Weight
Quiz	Best 7 of 8	On-going	15%
Term Test	2 hours, in class	2014-02-25	35%
Final Exam	Final examination (3 hours)	TBA	50%
<b>Total</b>			<b>100%</b>

## More Details for Assessment and Deadlines

There will be 8 quizzes, conducted during the tutorial sessions on Wednesday. Week 1, 6, 7, 12 does not have a quiz.

There will be 8 Homework assignments, which will be available on portal one week prior to each quiz; the assignments will not be collected or marked; however the corresponding quiz will be largely based on the problems given as homework.

No written or printed aids are allowed for either the Midterm test or the Final examination.

## Penalties for Lateness

None

## Procedures and Rules

### Missed Term Work

If you are forced to miss a test/quiz due to illness or some other extenuating circumstances, you must submit documentation to the instructor no later than one week after the day of the test/quiz. There will be **no make-up** test/quiz; if you miss a test/quiz for some approved legitimate reason, the marking scheme will be adjusted to compensate.

For medical notes, you must use the official UTM medical certificate, available on the course website.

### Missed Final Exam

Students who cannot write a final examination due to illness or other serious causes must file an [online petition](#) **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 Medical Certificate 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 ROSI 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 else's 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 use your registered @utoronto.ca email address for all communications with the instructor or the TAs.

Last Date to drop course from Academic Record and GPA is March 9, 2014.