

MAT240H1F, LEC0101: Algebra I
Fall 2023
University of Toronto

I. Instructor and Teaching Assistants

Course Instructor

Name: Florian Herzig
Email: herzig@math.toronto.edu
Office Hours: to be determined

TAs

Name: Stanislav Balchev
Email: stanislav.balchev@mail.utoronto.ca
Office Hours: to be determined

Name: Brian Ceco
Email: brian.ceco@mail.utoronto.ca
Office Hours: to be determined

Name: Nathan Fugleberg
Email: nathan.fugleberg@mail.utoronto.ca
Office Hours: to be determined

Name: Kevin Watmough
Email: kevin.watmough@mail.utoronto.ca
Office Hours: to be determined

II. Course Overview

Course Description (from the academic calendar): A theoretical approach to: vector spaces over arbitrary fields, including \mathbb{C} and \mathbb{Z}_p . Subspaces, bases and dimension. Linear transformations, matrices, change of basis, similarity, determinants. Polynomials over a field (including unique factorization, resultants). Eigenvalues, eigenvectors, characteristic polynomial, diagonalization. Minimal polynomial, Cayley-Hamilton theorem.

Pre-requisites: High school level calculus

Co-requisites: MAT157Y1

Course Objectives

This course is an introduction to linear algebra over an arbitrary field aimed at students with a very serious interest in mathematics. Linear algebra is a subject that is fundamental and very useful in pure as well as applied mathematics. The emphasis in this course will be on the conceptual structure of the subject, building up from basic axioms using proofs. You will also learn about some computational techniques.

Course website: The website for the course is <http://www.math.toronto.edu/~herzig/240-f23.html>.

Textbooks: Friedberg, Insel and Spence, *Linear Algebra*, 4th or 5th edition, Prentice Hall.

How this course is organized

Lectures will take place Tuesdays 11-1, Thursdays 12-1 (in person).

Tutorials will be in person and start in the week of September 18. Students are expected to attend the tutorial at the scheduled time for their registered section.

Technical Requirements

Some of the office hours will be virtual over zoom (<https://utoronto.zoom.us/>). For this purpose, students will be required to have:

- Reliable internet access. It is recommended that students have a high speed broadband connection (LAN, Cable, or DSL) with a minimum download speed of 5 Mbps.
- A computer or tablet or phone capable of running zoom.

If you are facing financial hardship, you are encouraged to contact your college or divisional registrar (<https://future.utoronto.ca/current-students/registrars/>) to apply for an emergency bursary.

III. Evaluation/Grading Scheme

Mark Breakdown

Assignments	20%
Term test	30%
Final Assessment	50%

Assignments

There will be weekly assignments, which you must submit by the due date. **No late assignments will be accepted.** Assignments will carry equal weight, and the lowest two assignment scores will be dropped.

We intend to collect your assignments using *Gradescope* ([gradescope.CA](https://www.gradescope.com), not .COM!). Your @mail.utoronto.ca account will be automatically signed up for a free account when you are assigned your first problem set. See their help centre for technical support. It is important that your solutions are **legible** (please preview to verify). It may take a bit of time to get used to Gradescope, and sometimes small technical issues occur. Please make sure to upload well ahead of the deadline to avoid any problems.

You may discuss your homework with classmates, but you have to write your solutions **on your own, in your own words**. Otherwise, it is considered **unauthorized aid or assistance** (working too closely with another student on an individual assignment so that the end result is too similar), which is an academic offence under the [University's Code of Behaviour on Academic Matters](#). If you find the solutions in books or on the internet, you must quote your source and still write it up in your own words! Otherwise, it may count as **plagiarism**, which again is an academic offense.

The use of generative artificial intelligence (AI) tools is strictly prohibited in all course assessments. This includes, but is not limited to, ChatGPT, GitHub Copilot, and open-source models that you have trained and/or deployed yourself. You may not interact with, nor copy, paraphrase, or adapt any content from any generative AI for the purpose of completing assignments in this course. Use of generative AI will be considered use of an unauthorized aid, which is a form of academic misconduct under the Code of Behavior on Academic Matters.

This course policy is designed to promote your learning and intellectual development and to ensure that our evaluations are a fair and accurate assessment of your learning. Though it may be tempting to use generative AI to assist you when completing your assignments, this will simply inhibit your learning.

Term Test

The term test will take place on Tuesday, October 31, 11:10am–1:00pm (in person).

No aids (including calculators, phones, smart watches, etc.) will be allowed. More details about the test will be provided as the time approaches.

Final Assessment

The final assessment will be held in person during the final assessment period in December 2023 and will be scheduled by the registrar. More information will be provided during the Fall semester.

IV. Course Policies

Policy on Missed Term Work

No late assignments will be accepted.

If you miss the term test for illness or another valid reason, *you must submit the [official U of T absence declaration](#) and inform the course instructor within one week of the test, or your test mark will be counted as 0.* If you provide a valid reason within one week, the marking scheme will be adjusted appropriately. There will be no makeup term test!

The following are recognized forms of documentation for missed term work:

- Absence declaration via [ACORN](#)
- [U of T Verification of Illness or Injury Form \(VOI\)](#)
- College Registrar's letter
- Letter of Academic Accommodation from Accessibility Services

Students who are absent from class for prolonged periods and who require consideration for missed academic work should contact the instructor and verify their absence(s) through either the Absence Declaration tool, Verification of Illness or Injury (VOI) form, College Registrar Letter, or Letter of Academic Accommodation from Accessibility Services, as appropriate to their situation.

For more information, see <https://www.artsci.utoronto.ca/current/academics/student-absences>.

Re-marking Policy

A student who believes an individual item of work has been incorrectly or unfairly marked may ask the person who marked it for a re-evaluation. With evidence to back their appeal, students should make such requests as soon as reasonably possible after receiving the work back, but no later than 2 weeks after it was returned.

Email Policy

Should you have a question that is not answered on the course site (please check there first!) please note that all communications with the Course Instructor or TAs must be sent from your official utoronto email address, with the course number included in the subject line. If these instructions are not followed, your email may not be responded to.

V. Institutional Policies and Support

Academic Integrity

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters (<https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019>). If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to your Course Instructor. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources (for example, the University of Toronto website on Academic Integrity <http://academicintegrity.utoronto.ca/>).

Accessibility

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. Students with diverse learning styles and needs are welcome in this course. If you have a disability that may require accommodations, please feel free to approach your Course Instructor and/or the Accessibility Services office as soon as possible. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Link to Accessibility Services website: <https://studentlife.utoronto.ca/departments/accessibility-services/>

Equity, Diversity and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Important Academic Dates & Deadlines

The academic dates include enrolment dates, drop deadlines, exam periods, petition deadlines and more. <https://www.artsci.utoronto.ca/current/dates-deadlines/academic-dates>

Other Academic and Personal Supports

- Writing Centre <https://writing.utoronto.ca/writing-centres/arts-and-science/>
- U of T Libraries <https://onesearch.library.utoronto.ca/>

- Feeling Distressed? <https://studentlife.utoronto.ca/task/support-when-you-feel-distressed/>
- Academic Success Centre <https://studentlife.utoronto.ca/department/academic-success/>
- College/Faculty Registrars <https://future.utoronto.ca/current-students/registrars/>