

MAT475H1F: Problem Solving Seminar
Fall 2021
University of Toronto

I. Instructor and Teaching Assistants

Course Instructor

Name: Florian Herzig

Email: herzig@math.toronto.edu

Office Hours: to be determined, based on class availability

TA

Name: David Pechersky

Email: david.pechersky@mail.utoronto.ca

II. Course Overview

Course Description

This course addresses the question: How do you attack a problem the likes of which you have never seen before? Students will apply Polya's principles of mathematical problem solving, draw upon their previous mathematical knowledge, and explore the creative side of mathematics in solving a variety of interesting problems and explaining those solutions to others.

Prerequisites

MAT224H1/MAT247H1, MAT235Y1/MAT237Y1/MAT257Y1, and at least 1.0 credit at the 300+ level in APM/MAT

Course Objectives

Problem solving is an important aspect of mathematics, but in many courses you focus more on absorbing new material. The goal of this class is to introduce you to various methods of problem solving, so that you will become better at solving math problems and also at writing out solutions.

Textbooks/ Course Readings

[Problem-solving strategies](#) by Arthur Engel (available online at U of T Libraries)

How this course is organized:

This course meets for three hours each week and there are no tutorials.

Usually, each week we will focus on a new topic. We'll introduce new material on Thursday and then there will be a roughly 20 to 25-minute long quiz at the beginning of class on the next Thursday.

This seminar class is meant to be very interactive. We'll be discussing lots and lots of problems, and you will split into groups to work on them. Participation will count in this class! Discussing and presenting your ideas and solutions is a great way to improve your problem solving abilities!

Lectures will be online on Zoom until September 23, 2021, inclusive. Recorded lectures will not be made available. All students are expected to attend class at the scheduled time (synchronously). After that, the course meets in person at BA2185.

The course website is <http://www.math.toronto.edu/~herzig/475-f21.html>.

Please note that due to the ongoing COVID-19 pandemic, the course delivery method may change after term has started and this may alter the course organization. Students are expected to check the course site for updates as the contents of this syllabus may change.

Technical Requirements (during periods when the course is online)

In order to participate in this course online, 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.
- Headphones, microphone and webcam are highly recommended for in-class participation.
- In addition, you will need a scanner or phone camera to submit assignments and tests. If you are using your phone, I recommend you download a free scanning app (such as [scanbot](#) or [camscanner](#)), as the quality will be much better.
- A computer satisfying the minimum technical requirements (<https://www.vicereprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/>)

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

Quizzes (about 11)	50%
Participation	10%
Final Assessment	40%

Assignments

There will be about 11 quizzes during class on Thursdays (starting Week 2). There are no make-up quizzes, but the lowest three quiz scores will be dropped.

Weekly homework will be assigned but not collected. Quiz problems will be related to the assignment. Practice is essential in this course! *You are encouraged to work together with other students on homework!*

Term Test

There will be no term tests.

Final Assessment

The final assessment will be held during the final assessment period in December 2021 and will be scheduled by the registrar. Information about the format will be provided during the Fall semester.

IV. Course Policies

Policy on Missed Term Work

As flexibility for missed quizzes have been built into the marking scheme, missed quizzes will not be accepted.

Please note that Verification of Illness forms (also known as a “doctor’s note”) are temporarily not required. Students who are absent from class for any reason (e.g., COVID, cold, flu and other illness or injury, family situation) and who require consideration for missed academic work should report their absence through the online absence declaration. The declaration is available on ACORN under the Profile and Settings menu.

V. Institutional Policies and Support

Mathematics Department Policy on Wearing Masks in Class

Masks are an inexpensive and effective measure that limits the spread of COVID and will facilitate the return to normal life as quickly as possible. Failure to wear a mask properly entails unnecessary risks to public health and may disrupt learning by creating unwelcome distractions. It is the policy of the Math Department that in-person instruction cannot take place unless all students are wearing a mask that covers both mouth and nose, with exceptions only for students who have received documented exemptions. As with other accommodations, any student who has an official exemption from wearing a mask is expected to inform the instructor **before** classes begin, providing documentation.

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/department/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/registrar/>