

MATH 184/284/384 - Problem Solving Techniques

Fall 2022

General information

Instructors: Martin Frankland and Edward Doolittle

Email: Martin.Frankland@uregina.ca

Office: CW 307.17

Office hours: Tuesday 5-6 PM, Wednesday 5-6 PM, or by appointment.

Office hours are held both in person and on Zoom (link is posted on UR Courses).

Meetings: Mondays 5:00 - 5:50 PM in Education Building 388.

Textbook: Paul Zeitz, *The Art and Craft of Problem Solving*, Third edition.

Note: No need to buy the textbook. Excerpts will be provided.

Prerequisite: Precalculus 30 with at least a 75%; or Calculus 30; or Mathematics B30 and C30 with a grade of at least 65% in each; or MATH 102.

UR Courses: <https://urcourses.uregina.ca/>

This site will contain announcements, additional course material, and solutions to selected problems. The site is updated throughout the semester, so please check back regularly.

Course outline

The course consists of hands-on training in mathematical problem solving, with a view towards the Putnam Competition. The course covers strategies to tackle problems, as well as selected topics from algebra, combinatorics, number theory, geometry, and analysis.

Grading scheme

- Attendance: 50%
- Course work: 50%

The course work (for the semester) consists of the following:

- MATH 184: Presenting solutions to 2 problems in class.
- MATH 284: Presenting solutions to 3 problems in class and submitting a written solution to one problem.
- MATH 384: Presenting solutions to 3 problems in class and submitting written solutions to 2 problems.

Course delivery and computer requirements

The course is taught **in person**. Meetings, the mock Putnam, and the Putnam Competition all take place on campus.

Office hours will be offered both in person and on Zoom.

Attendance

For a full attendance score, at most **one** meeting may be missed.

The mock Putnam will count for two meetings: the morning and afternoon sessions.

A missed meeting can be made up for by presenting an additional solution in class, or by writing the Putnam Competition (two attendance units).

Putnam

- Mock Putnam: **Saturday November 26**.
- Putnam Competition: **Saturday December 3**.

Participation in the mock Putnam is mandatory, as part of the attendance component. The content of the solutions will not factor into the grade.

Participation in the Putnam Competition is not mandatory, though strongly encouraged. It will be a celebration of the work you put into the training sessions.

There is no exam in the course. In particular, you can ignore the Final Exam date listed on the Course Catalogue.

Missed course work

Illness: If you are unable to meet a course requirement due to prolonged illness or other serious circumstances, please contact me as soon as possible.

Attendance: If you miss a meeting for any reason, it will count as the one attendance score being dropped. You can make up for a missed meeting by presenting an additional solution in class, or writing the Putnam Competition.

Academic integrity

The problem solving sessions are collaborative in nature. You are encouraged to discuss the problems and solutions with your peers and the instructors.

When submitting written solutions, each student must write **their own** solutions. Handing in material copied from the internet or another source is considered cheating. **Cite sources** that you consult, for instance Wikipedia, Math Stack Exchange, or online course notes.

For more information on academic integrity, please consult the *Student Code of Conduct and Right to Appeal*, section “Academic Misconduct”, available at:

<https://www.uregina.ca/student/registrar/resources-for-students/academic-calendars-and-schedule/undergraduate-calendar/sections.html>

as well as the *Faculty of Science Student Handbook*, section “Academic Integrity”, available at:

<https://www.uregina.ca/science/assets/docs/pdf/programpdf/new-student-manual.pdf>

Accessibility

Any student with special needs who may need accommodation should contact the Centre for Student Accessibility at:

<https://www.uregina.ca/student/accessibility/>

After I receive the letter from the Centre for Student Accessibility, please contact me to discuss the accommodation.