

MATH1077 – EXPLORING MODERN MATHEMATICS – Fall 2023  
Professor Dupuy, [taylor.dupuy@gmail.com](mailto:taylor.dupuy@gmail.com)

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| <b>Sec A Time:</b> MWF 2:20pm-3:10pm | <b>Sec B Time:</b> MWF 3:30pm-4:20pm |
| <b>Sec A Place:</b> VOTEY BLDG 105   | <b>Sec B Place:</b> WILLIAMS HALL 30 |

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**Office hours:** TBD

**Course webpage:** <https://tdupu.github.io>

**Description and objectives:** We examine various subjects not typically seen in traditional math courses. Topics may include but are not limited to:

- The mathematics of the 2009 mayoral election in Burlington (and how it relates to slime molds).
- How to win on a game show.
- Why flipping coins is deep. (It is, I swear.)
- Why maps of the world only need four colors to color all of the countries.
- Symmetry.
- How a group of students at MIT beat the lottery.
- Why money is worth less to rich people.
- The Golden Ratio.

My main objective is for people to come away from this class with a better appreciation of what mathematical thinking really is.

**Books:**

- (main) *Excursions in Modern Mathematics* by Peter Tannenbaum (10th Edition).  
The book *Excursions in Mathematics* can be both dry and terse which is not ideal for what this course emphasizing ideas. I did not select this book. To make up for this, I'm going to supplement.
- (supplement) *The Magic Of Mathematics* by Gross and Harris. You do not need to buy this book. The chapters you may want to read are on the course webpage. They are limited to counting and probability.
- (supplement) *How Not To Be Wrong* by Ellenberg. You do not need to buy this book. I learned many of the stories I'm going to tell from this book and wanted to cite it here.

**Technology:** No special technology is needed. No blackboard. No online homework. In the rare event that we move online due to an unforeseen COVID surge we will meet on MSTeams.

**Types of assignments** The course is 15 working weeks and will be broken into roughly three five week periods each ending in an exam.

- **Reflections:** These are written assignments due at the beginning of a class assigned during a previous class. They are credit/no-credit and to get full credit one needs to just needs to participate in the reflection (while short responses are acceptable, single sentences scribbled before class having nothing to do with the reflection don't count). Before introducing a new idea I will assign a reflection which will facilitate a discussion to follow in a later period. They are typically of the form "try  $X$ " or "what do you think about  $X$ ?".
- **Homework and Quizzes:** Homework problems accompanying can be found on the course webpage (labelled *Problem Bank* under the Quiz Schedule). Although they will not be collected in full, there will be periodic quizzes over the homework problems which will either be identical to or very similar to the homework problems.

The in-class quizzes are open book, open note, and open calculator so students are encouraged to work out all of the problem bank questions in advance to improve their scores.

## Grading

- *Quizzes and Reflections* The grade is determined by quizzes and reflections with each quiz and reflection having equal weight.
- *Quiz Drop Policy* Recognizing that students need to miss quizzes from time to time we allow for *one dropped quiz for every five quizzes given*. In addition there is a quiz redo policy.
- *Quiz Redo Policy* In addition to dropping quizzes, we allow students to replace all the quizzes during a designated midterm quiz-redo session and the final quiz-redo session. *There are no quiz redos sessions outside of the redo time periods*. Student should not miss these very special meeting times.
- *Late Reflections* Any late reflections must be submitted with the bulk collection of an assigned quiz or reflection at a later date. I can't accept them loose since I will lose them. (See my ADHD statement.) In addition, the grader is not required to grade any late assignment so late assignments may not get graded. Submitting something late generates extra work for this person and I can't force them to grade it.

Final letter grades are assigned according to the following table.

|    |        |   |       |    |       |
|----|--------|---|-------|----|-------|
| A+ | 97-100 | A | 93-96 | A- | 90-92 |
| B+ | 87-89  | B | 83-86 | B- | 80-82 |
| C+ | 77-79  | C | 73-76 | C- | 70-72 |
| D+ | 67-69  | D | 63-66 | D- | 60-62 |
| F  | < 60   |   |       |    |       |

**ADHD statement** I have combined type ADHD. This sometimes manifests itself in typos and oversights and losing things if they are not done in a routine manner. If you find any mistakes or I forget to respond to something give me a nudge. I thank you in advance for your patience. *I cannot accept loose assignments.*

## Important dates:

Add/drop deadline ..... Sept 11, 2023  
 Last day to withdraw ..... October 30, 2023  
 Last day of class ..... Dec 8, 2023

### Final Exam Schedule:

- 94011 MATH 1077 A GP Exploring Modern Mathematics 14-DEC-2023 13:30 –16:15 VOTEY 105
- 94012 MATH 1077 B GP Exploring Modern Mathematics 15-DEC-2023 13:30 –16:15 WILLMS 301

**Math help sessions** UVM Mathematics PhD students hold math help sessions every weekday starting around 5PM and ending around 7PM. I would recommend visiting those help sessions for assistance as our graduate students are excellent. These are located on the 4th floor of the Innovation building every weekday. Please check the Mathematics and Statistics Department webpage for scheduling details.

**Expectations:** Students are expected to regularly attend class, complete any assigned work, and comply with UVM's *Code of Student Conduct*. Moreover, students are expected to act with *academic integrity*. That is, the student may not plagiarize or fabricate any work, nor may the student collude or cheat. See UVM's *Code of Academic Integrity*.

**Student learning accommodations:** In keeping with University policy, any student with a documented disability interested in utilizing ADA accommodations should contact Student Accessibility Services (SAS), the office of Disability Services on campus for students. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter. All students are strongly recommended to discuss with their faculty the accommodations they plan to use in each course. Faculty who receive Letters of Accommodation with Disability Related Flexible accommodations will need to fill out the Disability Related Flexibility Agreement. Any questions from faculty or students on the agreement should be directed to the SAS specialist who is indicated on the letter.

*Contact SAS:* A170 Living/Learning Center;  
802-656-7753

[access@uvm.edu](mailto:access@uvm.edu)

[www.uvm.edu/access](http://www.uvm.edu/access)

**Religious holidays** Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time. See [www.uvm.edu/registrar/religious-holidays](http://www.uvm.edu/registrar/religious-holidays).

**FERPA rights disclosure:** The purpose of this policy is to communicate the rights of students regarding access to, and privacy of their student educational records as provided for in the Family Educational Rights and Privacy Act (FERPA) of 1974. See [here](#) for the disclosure. Sensitive emails should be sent to [tdupuy@uvm.edu](mailto:tdupuy@uvm.edu).

### Promoting health and safety:

*Center for Health and Wellbeing:* <https://www.uvm.edu/health>

*Counseling & Psychiatry Services (CAPS):* Phone: (802) 656-3340

*C.A.R.E.:* If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office (802-656-3380). If you would like to remain anonymous, you can report your concerns online by visiting the Dean of Students website at <https://www.uvm.edu/studentaffairs>