MATH 017 A – Applications of Finite Math

Fall 2021

Instructor:	Jesse Franklin	**Time:**	MWF 12:00 pm – 12:50 pm
Email:	jesse.franklin@uvm.edu	**Place:**	Lafayette L300

Office hours: Monday 3-4pm, Wednesday 2-3pm and by appointment on Teams.

Description and objectives: This course provides an introduction to the mathematics of finite systems via everyday applications. Within this context, we examine various subjects not typically seen in traditional math courses. Topics will include, but are not limited to, the mathematics of voting systems and power, fair-division problems and apportionment, finances, probabilities and odds, and symmetry with some group theory. Our goal is to develop mathematical intuition while examining sometimes surprising facts about the world around us, to learn how mathematicians solve problems, and to enjoy the aesthetics of the subject.

Textbook: *Excursions in Modern Mathematics* by Peter Tannenbaum (Ninth Edition).
Note: you do NOT need to buy this book.

Technology:

- *BlackBoard*, a website used by UVM for course management. Here you will find announcements, a link to this syllabus and the course schedule, assignments, and quizzes. You can also check your grades.
- You will need the capacity to *scan documents*, such as quizzes and exams, to PDF files. Note that most smart phones have a scan function, and this is perfectly acceptable.
- A *scientific calculator* is highly recommended, although there are many good online options such as desmos.com (click the Math Tools drop-down menu for calculator options).
- If you choose to purchase the online version of our textbook, you will get access to Pearson's *MyMathLab* platform which has good practice questions as well as the ebook.

Grading:

- *Homework assignments* will make up half of the grade.
- *Quizzes* will be $20\% = \frac{1}{5}$ of the grade and will be held each Friday in the form of a collaborative in class activity.
- *Two projects* will make up the midterm and final exam grades, and each is therefore exactly %15 of your final grade.

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				

Important dates:

Add/drop deadline .....
Midterm project due .....
Last day to withdraw .....
Last day of class .....
Final project due ..... at assigned exam time.

Expectations: Students are welcome to regularly attend class, expected to complete any assigned work, and must comply with UVM's *Code of Student Conduct*.

Academic integrity: As one might expect, 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 accomodations: 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
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.

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.

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

Mandatory reporting:
As a UVM instructor I am a required to report to UVM's student services if I feel that your mental or physical health is at risk, especially with regards to self harm, intent to harm another person or abuse.

Course evaluation: All students are welcome to complete an evaluation of the course at its conclusion. The evaluations will be anonymous and confidential, and the information gained, including constructive criticisms, will be used to improve the course.

Tentative schedule: See Figure below. We will work through chapters 1 - 4 concerning voting systems, weighted voting, fair-division, and apportionment. We will then study chapter 10 concerning financial mathematics, chapter 16 on probabilities, odds, and expectations, and we will end the semester with as much of chapters 11 and 12 as possible, on symmetries and fractal geometry respectively.