

MGF1106

Class #20120

Math for Liberal Arts I

Spring 2024

I. General Information

Class Meetings

- MTWRF Period 3 in LIT 225

Instructor(s)

- Name: Tharusha Bandara
- Office: TBD
- Office Hours: MTWRF Period 4. Additional hours available by request..
- Email: bandarac@ufl.edu

Course Description

MGF 1106 is a general education Mathematics course which is not intended to prepare you for Precalculus or Calculus. Instead, this course is meant to improve general mathematical reasoning skills and cover topics that are broadly applicable in daily life. Topics include voting, weighted voting, probability, symmetry and fractal geometry.

Prerequisites

None.

General Education Credit

- Mathematics

The [General Education](#) objectives for Mathematics are as Follows.

Courses in mathematics provide instruction in computational strategies in fundamental mathematics

including at least one of the following: solving equations and inequalities, logic, statistics, algebra, trigonometry, inductive and deductive reasoning. These courses include reasoning in abstract mathematical systems, formulating mathematical models and arguments, using mathematical models to solve problems and applying mathematical concepts effectively to real-world situations.

A minimum grade of C is required for General Education credit. Courses intended to satisfy General Education requirements cannot be taken S-U.

Required Readings and Works

Our textbook is *Excursions in Modern Mathematics, 9th Edition* by Peter Tannenbaum.

The textbook is primarily available as an e-book which **must be purchased using UF All Access**. Instructions for purchasing the textbook are on the Accessing MyMathLab page of the introductory module on Canvas.

All other materials will be presented on the section pages on Canvas. These pages include links to the video lectures and notes. While the video lectures are intended to be comprehensive, students are responsible both for watching the videos and reading the textbook.

Materials and Supplies Fees: \$27.99

II. Graded Work

Description of Graded Work

The following is a list of all graded assignments in the course, their point values, and details about their submission. Following this list is a table showing how final grades are assigned.

Exams

- There are three proctored exams during the term.
 - Exam 1 covers material from chapters 1 and 2
 - Exam 2 covers material from chapters 16 and 17
 - Exam 3 covers material from chapters 11 and 12
- You are allowed pencil and scratch paper on the exams but no other notes are allowed.
- Depending on the exam you will either be allowed a four-function or scientific calculator.
- **General Education SLOs Met:** Communication, Content, Critical Thinking.
- **Submission:** In-Class
- **Value:** 3×165 points = 495 points.

Exam Reviews

- Each exam has a corresponding review with questions similar to exam questions.
- Students get unlimited attempts, but the correct answers will only show after the due date.
- Exam reviews are always due at midnight the day before the exam.

- **General Education SLOs Met:** Communication, Content, Critical Thinking.
- **Submissions:** Canvas
- **Value:** 5 points \times 3 = 15 points

Quizzes

- Quizzes are given in the weeks in which there is no exam
- Each quiz is timed (45 minutes) but not proctored.
- Students get two attempts, the better of which counts.
- **General Education SLOs Met:** Communication, Content, Critical Thinking.
- **Submission:** MyMathLab
- **Value:** 3 \times 50 points = 150 points

Lecture Quizzes

- Every class meeting will have a brief assignment which tests the basics of the lecture. These could either be clicker-style questions or a handout to be completed along with the lecture.
- Attendance in class is required to complete these assignments.
- **General Education SLOs Met:** Communication, Content, Critical Thinking.
- **Submission:** In-Class
- **Value:** 30 \times 2 points = 60 points.

Intro Assignments

- There are two introductory assignments due the first week of class.
 1. Chapter O homework: Orientation for the MyMathLab online homework system
 - **Submission:** MyMathLab
 - **Value:** 10 points
 2. Syllabus Quiz: A quiz on commonly missed class policies.
 - **Submission:** Canvas
 - **Value:** 10 points

Homework

- Homework is assigned each week.
- Homework may be attempted any number of times prior to the due date. In general, each exercise is graded without partial credit.
- **General Education SLOs Met:** Communication, Content, Critical Thinking.
- **Submission:** MyMathLab
- **Value:** Total 260 points (about 45 per week)

Grading Scale

Your final grade is computed by summing up your total points and rounding to the nearest full point. A letter grade is then assigned using the chart below. For information on how UF assigns grade points, visit: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

| Letter Grade | Point range | | Letter Grade | Point range |
|--------------|-------------|--|--------------|-------------|
| A | 900+ | | C | 660-699 |
| A- | 860-899 | | C- | 620-659 |
| B+ | 820-859 | | D+ | 580-619 |
| B | 780-819 | | D | 540-579 |
| B- | 740-779 | | D- | 500-539 |
| C+ | 700-739 | | E | 0-499 |

A minimum grade of C is required for General Education credit. Courses intended to satisfy General Education requirements cannot be taken S-U.

Attendance and Participation

Attendance: As outlined above, each class carries a two point assignment. A student must attend class to earn these points. The attendance policies in this class are consistent with UF's policies which can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Participation: There is no specific participation grade. However, the in-class assignments will require attention to the lecture. Students who stay active, asking and answering questions during class typically perform better than students who do not.

III. Annotated Weekly Schedule

| Week | Topic | Summary | Required Readings/Works | Assigned Work Due |
|--------|-------------------------------|---|-----------------------------------|--|
| Week 1 | Voting Methods | Properties of Voting systems. Plurality, Borda, Elimination, and Copeland methods. Fairness | Syllabus Chapter 1 of Text | Intro. Assignments Week 1 HW Quiz 1 |
| Week 2 | Weighted Voting Systems (WVS) | WVS Basics. Veto Power. Banzhaf and Shapley-Shubik power. Combinatorics of WVS | Chapter 2 of Text | Week 2 HW Exam 1 |
| Week 3 | Probability | Sample Space and Events. Permutations and Combinations. Expected Value and Risk. | Chapter 16 of Text | Week 3 HW Quiz 2 |
| Week 4 | Statistics | Measures of center and spread. Normal Distribution, empirical rule, and central limit theorem. | Sections 15.2, 15.3 Chapter 17 | Week 4 HW Exam 2 |
| Week 5 | Symmetry | Rigid Motions (Reflection, Rotation, Translation, and Glide Reflection). Symmetry groups and Frieze Patterns. | Chapter 11 | Week 5 HW Quiz 3 |
| Week 6 | Fractals | Replacement Rules. Fractal Dimension. Geometric Series. Complex Numbers and the Mandelbrot Set. | Chapter 12 | Week 6 HW Exam 3 |

IV. Student Learning Outcomes (SLOs)

At the end of this course, students will be expected to have achieved the [General Education](#) learning outcomes as follows:

- **Content:** Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline. After completing this course students will be able to employ strategies in solving problems in voting systems, probability, statistics, and geometry. (Critical Thinking for Gen Ed Math, assessed through homework, lecture quizzes, quizzes, and exams)
- **Communication:** Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline. Throughout this course, students will use mathematical methods to solve problems. In their solutions, they will translate problems into mathematical language, use mathematics to produce a solution, and then translate that solution back to the original problem. Students will communicate mathematical solutions clearly and effectively. (Communication for Gen Ed Math, assessed through homework, lecture quizzes, quizzes, and exams)
- **Critical Thinking:** Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems. In this course, students will use mathematical methods to solve real-world problems. Students will use fairness criteria to assess the fairness of various voting methods, use combinatorial methods to assess both individuals' power in weighted voting systems and the likelihood of random events, use statistical techniques to make estimates about data, use geometric methods to assess the symmetry of an object, and use both algebraic and geometric techniques to reason about fractals. (Critical Thinking for Gen Ed Math, assessed through homework, lecture quizzes, quizzes, and exams).

VI. Policies

Attendance Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting

<https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

UF Evaluations Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email, they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/scer/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructors in this class.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: <http://www.counseling.ufl.edu/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Free Help-The Little Hall Math Lab

In addition to attending your discussion section regularly and visiting the office hours of your instructor and teaching assistant, for help, the Little Hall Math Lab located in Little Hall 215 offers free drop-in assistance with math homework Monday through Friday from 9:30 to 4:00. It is staffed by mathematics graduate students and undergraduate tutors. Please note that this space is not designed for intense one-on-one tutoring, but rather as a resource for quick questions and explanations. You should not expect the staff to help you if you have not at least begun your homework and have specific questions. Moreover, they absolutely will not assist you with quizzes or any other such work. More details are available here: <https://oas.aa.ufl.edu/students/tutoring/>

In-Class Recordings

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.