

MGF1107 Spring 2021 Syllabus

This document is divided into two main sections. The first deals with the various policies, both UF and individual, which govern the course. The second is a list of the assignments in this class along with their due dates.

Course Summary

MGF 1107, Mathematics for Liberal Arts 2 is a general education/math course which is not intended to prepare you for Precalculus or Calculus. Instead, this course emphasizes mathematical reasoning and the connections between mathematics and the liberal arts. This course qualifies for both GenEd and Gordon Rule credits.

The main goal of this class is for you all to have an authentic mathematical experience. Sometimes we will play with ideas and see where it leads us, and sometimes we will grapple with difficult problems to uncover a new (to us) truth. We will not repeatedly work different versions of the same problem. We may discover a formula or two in our exploration and use them in service of even more difficult problems, but we will not be memorizing and plugging into formulas as a significant component of the course.

Communication Information

Instructor Name: Dr. Ross Ptacek

Office Location: LIT 442 (but I won't be there)

Phone and Email: (352) 294-2350 [department], rptacek@ufl.edu

Preferred form of Contact: Please use Canvas messages or email. For grade inquiries you should use Canvas messages.

Office Hours: MWF 10:00-11:00 AM EST via Zoom

TA (Co-Instructor) Name: Jason Johnson

Office Location: LIT 477 (but I won't be there)

Phone and Email: (352) 294-2350 [department], jasonchaos@ufl.edu

Preferred form of Contact: Please use Canvas messages or email. For grade inquiries you should use Canvas messages.

Office Hours: TBD via Zoom

Statement on TA's Role: The TA in this class, Jason Johnson, functions like a co-instructor in this class. He will be present at every one of our synchronous meetings and will take a roughly equal role in facilitating group activities and in-class explanations. If you have administrative questions, you should direct your inquiry to Dr. Ptacek.

Communications: We primarily will communicate with the entire class through Canvas announcements. Otherwise, communication will come to your ufl.edu email address. If you send an email, you can generally assume a same business day response and no longer than two business days. If you don't get a response by then, please resend your message to *both* of us.

Class Compartment: Please treat our synchronous Zoom classes as you would a live class. Dress as though you are in the classroom. Sticky notes will fall and pets or software glitches will unmute your camera. Failure to dress properly will result in loss of participation points for that day. There is a

significant discussion component to this class. Treat one another with respect. Please report anything that makes you feel uncomfortable, but do not take action yourself. We are committed to diversity and inclusion of all students in this course. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements.

Course Materials

- Required Reading and Other Course Materials: There is no textbook for this course. Notes will be distributed for every section via Goformative (described below.)
- Required Technology:
 - **Zoom:** We will use Zoom for office hours, and synchronous course meetings. UF's website for Zoom is <https://video.ufl.edu/conferencing/zoom/> (Links to an external site.). As a student you will be clicking Zoom links from within Canvas and this should all work automatically.
 - **Goformative (www.goformative.com (Links to an external site.)):** Goformative is an online system for facilitating both classwork and homework. You will need to make a free account by going to <https://goformative.com/join> (Links to an external site.) and entering the course code W2QD6U. After doing so you will be prompted to enter your email address and password. You must **use your ufl email address** when signing up.
 - **Ziteboard (<https://ziteboard.com/>):** Ziteboard is an online whiteboard service that we will be using for collaboration this term. Again, you will need to make a free account in order to use the whiteboards and participate in the group activities. Just click on the "Log In" link from the top right on <https://ziteboard.com/> (Links to an external site.) and you will be prompted for an email address and password. It's nice to use your ufl email when signing up for this but it is not required.
- Materials and Supplies Fee: n/a.

Class Meetings

This course has been designated as a HyFlex class for Spring 2021. In the HyFlex model a small group of students, at most 6 given the size of our room, will learn in the classroom while the rest join on a Zoom call. The university policy is that at least 50% of class time must be carried out in this fashion. In keeping with this policy, our class meetings will be arranged as follows.

- Tuesday classes (Periods 4 and 5) will be **HyFlex**. The small face-to-face section will meet in our classroom, MAE 238, while the rest will join via Zoom call. The only exception is that our very first class on 1/11 will be **online-only**. Students will all join class via Zoom.
- Thursday classes (Period 5) will be **online-only**. We will not be using the classroom. All students will join the class via Zoom.

Our course meetings are almost entirely devoted to class discussion and group activities. In order to interact with the other students in the class, **students in the face-to-face section are required to bring a computer to Tuesday classes**. These students will need to log into Zoom, Goformative, and Ziteboard to participate in the class. Having multiple people in the same room on the same Zoom call

presents certain technical challenges with microphone spill, so please be mindful of your speakers and microphone. Headphones are recommended for group assignments.

Course Format

This class is best described as a "flipped" class. Almost every class meeting will be preceded by a short assignment to introduce new concepts and terminology. These assignments are typically accompanied by a video to help explain difficult concepts. As a result, our class meetings do not involve any significant lecture portion. We will spend class time either engaging in a discussion or working in small groups on challenging problems and sharing solutions with the class. There will be weekly (usually) in-class diagnostic quizzes to make sure that nobody is falling behind. Topics from class will be both reinforced and expanded upon in the homework. Lastly, there is a final project which will be worked on over the course of the term. All of these assignments are explained in more detail in the [List of Graded Work](#).

Notably, there are no exams or other high pressure timed assignments in this class. Instead, there is a type of homework exercise, called a mastery problem, which fills the role of major during-term assessments. Mastery problems are difficult, open-ended problems in which student and teacher engage in dialog to guide the student toward solution. These are discussed in more detail in the [List of Graded Work](#).

Contact Hours: "Contact Hours" refers to the hours per week in which students are in contact with the instructor, excluding office hours or other voluntary contact. The number of contact hours in this course equals the number of credits the course offers.

Statement on Workload: As a Carnegie I, research-intensive university, UF is required by federal law to assign **at least 2 hours of work outside of class for every contact hour**. Work done in these hours may include reading/viewing assigned material and doing explicitly assigned individual or group work, as well as reviewing notes from class, synthesizing information in advance of exams or papers, and other self-determined study tasks.

In this class this works out to 9+ hours per week as follows.

- 3 hours in our T/R class meetings (contact hours)
- 2 hours of pre-classwork assignments (1 each for T/R class)
- 4+ hours spent on homework, the final project, or other studying

If you find yourself putting in more than 9 hours per week but still struggling, please reach out so that we can work out a plan to get you back on track.

Statement Regarding Course Recording: Our class sessions may be audio visually recorded for students in the class to refer back to and for use of enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded. If you are unwilling to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate

exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Grading Policies

There are 1000 total points in this class, broken down as follows.

Pre-Classwork Assignments	100 points (20 assignments, 5 pts each)
Classwork	90 points (best 18, 5 pts each)
Lv1 Homework	100 points (best 10, 10 pts each)
Lv2 Homework	160 points (best 8, 20 pts each)
Lv3 Homework (Mastery)	200 points (best 5, 40 pts each)
Quizzes	100 points (best 10 of 14, 10 pts each)
Final Project	250 points (125 pts paper, 125 pts visual aid)
Total	1000 points

A full description of these assignment categories are in the [List of Graded Work](#). Final grades are assigned on a 125 point scale:

- 1000-875 is an A
- 874-750 is a B
- 749 - 625 is a C
- 624 - 500 is a D
- Anything lower is an E

A C or higher is needed to meet degree requirements. Plus and minus grades are awarded based on the strength of the final project, Lv3 homework, class participation, and overall growth over the course of the term. Otherwise, the grading scale is strictly adhered to. Grading in this class is consistent with the UF polices at <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/> ([Links to an external site.](#)). You can also find UF's grade point policy at this link.

Mastery Grades: The Level 3 homework is graded for mastery. This means that only essentially correct solutions will receive any points. There is a well-defined review and resubmission process by which students will refine their answers with instructor guidance. Please consult the [List of Graded Work](#) for a full description.

Policy on Late and Make-up Work: Requirements for class attendance and make-ups, 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>.

Any makeup (this includes extension) request **must be made prior to the deadline of the assignment** unless an emergency prevents communication. Makeups are only approved in the case of official UF business, religious observances, or personal emergency. In most cases, documentation is required to verify the reason for absence. Makeups may be denied if the reason for absence was known about well before it being communicated.

Grade Return Timing: Most assignments will be graded automatically by the Goformative software and will be returned almost as soon as the deadline passes. Some questions require manual grading, so you

may see some things marked wrong that you know are right. Please wait a few days before reporting these grading errors. Mastery assignments are like small projects and usually take a week or so to grade properly. So these may linger as zeros until they are graded.

Grade Disputes: Students are strongly encouraged to ask questions about potential mistakes in graded assignments. Discussing why something was marked as incorrect is a great way to learn, and this discussion is a fundamental part of mastery assignments as outlined above. However, these discussions should occur as assignments are returned, not as an end-of-term attempt to scrape together a few extra points. In general, students have **one week** after a grade is returned to review the assignment and dispute a grade. Discussion after this window is still encouraged, but it will not result in an improved grade. Moreover, end of term point negotiations will be **penalized with a minus grade**. For example a student with 874 points (in the B range) who asks for grade leniency at the end of the term will receive a B- instead of what would certainly have been a B+. So please discuss solutions with us, but do not haggle for every individual point and, moreover, don't do it on the last day of the semester.

Honor Code

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 (sccr.dso.ufl.edu/process/student-conduct-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 instructor or TAs in this class.

I believe that my strength as an educator is not in showing students how to solve problems but in being able to engage in the Socratic method with students. I want to ask the questions that kickstart your own thinking. Because of this, the use of a tutor is **strongly discouraged** and in most cases will be considered an **honor code violation**. The point is to think independently, not to present someone else's thoughts. Both skills are important, but in this class we focus on the former. In this class collaboration with your peers is encouraged, but the final submitted product must be your own work. In general, if a student cannot adequately explain their answers to the point that the instructor does not believe that it is the student's own work, it will be treated as though the student copied the answers, an honor code violation.

Any violation of the honor code will result in a final grade of 0 on the corresponding assignment with no further opportunities for resubmission. This is especially true for plagiarism on the final project.

Additional UF Policies

This course is aligned with the following UF policies

- Accommodation for Student with Disabilities: 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/> (Links to an external site.). This class supports the needs of different learners; 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.

- **Statement Regarding Evaluations:** 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 from [the Gatorevals website \(Links to an external site.\)](#). 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 [the evaluation system. \(Links to an external site.\)](#) Summaries of course evaluation results are available to students at the [public results website \(Links to an external site.\)](#).

UF Student Resources

- **UF Police:** The UF police are together for a safe campus. 392-1111 (or 9-1-1 for emergencies) and <https://police.ufl.edu/>.
- **Career Connections Center:** [Career Connections Center \(Links to an external site.\)](#) (352-392-1601 | CareerCenterMarketing@ufsa.ufl.edu) connects job seekers with employers and offers guidance to enrich your collegiate experience and prepare you for life after graduation.
- **Counseling and Wellness Center:** [Counseling and Wellness Center \(Links to an external site.\)](#) (352-392-1575) provides counseling and support as well as crisis and wellness services including a [variety of workshops \(Links to an external site.\)](#) throughout the semester (e.g., Yappy Hour, Relaxation and Resilience).
- **Dean of Students Office:** [Dean of Students Office \(Links to an external site.\)](#) (352-392-1261) provides a variety of services to students and families, including [Field and Fork \(Links to an external site.\)](#) (UF's food pantry) and [New Student and Family programs \(Links to an external site.\)](#)
- **Disability Resource Center:** [Disability Resource Center \(Links to an external site.\)](#) (DRCaccessUF@ufsa.ufl.edu | 352-392-8565) helps to provide an accessible learning environment for all by providing support services and facilitating accommodations, which may vary from course to course. Once registered with DRC, students will receive an accommodation letter that must be presented to the instructor when requesting accommodations. Students should follow this procedure as early as possible in the semester.
- **Multicultural and Diversity Affairs:** [Multicultural and Diversity Affairs \(Links to an external site.\)](#) (352-294-7850) celebrates and empowers diverse communities and advocates for an inclusive campus.
- **Office of Student Veteran Services:** [Office of Student Veteran Services \(Links to an external site.\)](#) (352-294-2948 | vacounselor@ufl.edu) assists student military veterans with access to benefits.
- **ONE.UF:** [ONE.UF \(Links to an external site.\)](#) is the home of all the student self-service applications, including access to:
 - [Advising \(Links to an external site.\)](#)

- [Bursar \(Links to an external site.\)](#) (352-392-0181)
- [Financial Aid \(Links to an external site.\)](#) (352-392-1275)
- [Registrar \(Links to an external site.\)](#) (352-392-1374)
- **Official Sources of Rules and Regulations:** The official source of rules and regulations for UF students is the [Undergraduate Catalog \(Links to an external site.\)](#) and [Graduate Catalog \(Links to an external site.\)](#). Quick links to other information have also been provided below.
 - [Student Handbook \(Links to an external site.\)](#)
 - [Student Responsibilities \(Links to an external site.\)](#), including academic honesty and student conduct code
 - [e-Learning Supported Services Policies \(Links to an external site.\)](#) includes links to relevant policies including Acceptable Use, Privacy, and many more
 - [Accessibility \(Links to an external site.\)](#), including the Electronic Information Technology Accessibility Policy and ADA Compliance
 - [Student Computing Requirements \(Links to an external site.\)](#), including minimum and recommended technology requirements and competencies

Weekly Schedule

Students in the course should use the [Modules](#) section of Canvas for a more detailed weekly schedule.

- **Week 1.** Introduction to the course, graph theory introduction
- **Week 2.** Graph theory: chromatic number, complete graphs
- **Week 3.** Graph theory: trees
- **Week 4.** Topology: Möbius strips and orientability
- **Week 5.** Topology: Utilities puzzle, Euler characteristic
- **Week 6.** Topology: Projections
- **Week 7.** Combinatorial game theory: game trees
- **Week 8.** Combinatorial game theory: symmetry, transpositions
- **Week 9.** Combinatorial game theory: N and P positions
- **Week 10.** Probability: sample space and events
- **Week 11.** Probability: Expectation and independence
- **Week 12.** Probability: Conditional probability, strategic game theory: dominance
- **Week 13.** Strategic game theory: Nash equilibrium, iterated games
- **Week 14.** Strategic game theory: Tragedy of the commons simulation
- **Week 15.** Final projects

List of Graded Work

Final Project

The final project is an investigation into a famous mathematical result or mathematician. Most topic choices are contemporary to show how math has continued progressing. The project consists of two parts: a research paper and an accompanying visual aid. A full description of the project parameters, including a list of acceptable topics, can be found on the [Final Project assignment page](#) on Canvas.

- **Submit:** Canvas at [Final Project](#) (paper and visual aid)
- **Value:** 250 points (125 paper, 125 visual aid)

Homework

The primary role of homework in this class is to reinforce but also, and more importantly, extend the topics in class or apply those topics in novel ways. Occasionally, the homework will introduce additional, optional topics that are related to the in-class topics. The optional topics provide students have some freedom to pick which homework exercises they wish to complete, especially with the more challenging assignments.

All homework is classified as level 1, 2, or 3. The difficulty scales along with the level, but at the same time fewer of the higher level assignments are required for full credit. Most homework comes as a set or a level 1, 2 and 3 assignment, but some are standalone assignments. Sets of homework must be completed in order. That is, you can not do the level 2 or 3 if you do not complete the level 1.

Level 1 Homework

- The level 1 homework is designed to either reinforce one of the core topics covered in class or to lay the groundwork for one of the optional topics.
- These assignments should be straightforward given the treatment of the material in class. A good rule of thumb is that a level one assignment should take no longer than one hour to complete. If you find an assignment taking longer than this, then please **seek assistance during office hours**.
- Instructors are willing to discuss any aspect of a level 1 assignment, up to and including whether an answer is correct or not. However, the student must have made an attempt on the question prior to asking for help.
- A level 1 homework will typically be due 3-5 days after the corresponding class period in which the material was covered.
- Each level 1 homework assignment is worth 10 points, but only your best ten assignments count toward your grade.
- **Submit:** Goformative (link varies per assignment)
- **Value:** 10 points x 10 assignments = 100 points

Level 2 Homework

- The level 2 homework goes slightly beyond the fundamentals in class and lays the groundwork for the level 3 assignment.
- These assignments should be challenging, but should take no more than two hours to complete. If you find a level 2 assignment taking longer than this, please **seek assistance during office hours**.
- Instructors are willing to discuss almost any aspect of a level 2 assignment. There are very few questions on these assignments where we will be cagey about whether a particular answer is correct, but we will always be willing to discuss errors in how you came up with your answer.
- Each level 2 homework assignment is worth 20 points, but only your best eight assignments count toward your grade.

- **Submit:** Goformative (link varies per assignment)
- **Value:** 20 points x 8 assignments = 160 points

Level 3 (Mastery) Homework

- The level 3 homework assignment does not require any new material. However, successful completion will require clever application of material from the level 1 and 2 homework and (almost always) some element of mathematical proof.
- Level 3 homework will require at least 3 hours of work. If you find progress is slow after an hour of work, you should **seek assistance during office hours**.
- Instructors are happy to discuss mastery assignments, but answers will be less straightforward since the goal is helping to guide the student's original thoughts.
- Level 3 homework assignments are graded based on **mastery**. Here are more details about mastery grading.
 - Only competent efforts will receive **any** points at all.
 - While mastery assignments will be submitted on Canvas or Goformative, the grade will only be entered after a **conference with an instructor**. It is the student's responsibility to schedule this conference within a week of the deadline. In the conference, the student must show complete understanding of their solution to get full marks.
 - If a solution falls short of mastery but is on the right track, the student will be given partial credit and a chance to resubmit. In general, the resubmission window will be a week from the conference. Students are strongly encouraged to have some discussion of their solution prior to their first submission to ensure that they are on the right track and are able to resubmit.
 - This policy is mirrored in abridged form in the [Course Overview and Policies Page](#) in the "Grading Policies" section.
- Each level 3 assignment is worth 50 points, but only your best five count toward your grade.
- **Submit:** Goformative (link varies per assignment.) Additional work from resubmissions may be submitted on Canvas on the assignment page.
- **Value:** 50 points x 4 assignments = 200 points

Quizzes

- There is one quiz for each of the 14 full weeks of class. They will always cover the previous week's worth of material and/or a documentary. Of the 14, only 10 will count for credit.
- Quizzes are open notes.
- **Submit:** Goformative (link varies per assignment.) during class
- **Value:** 10 points x 10 assignments = 100 points.

Pre-Classwork

There will be an assignment due prior to (usually midnight before) almost every class period. These will usually take around half an hour and never longer than an hour. This is as close as we get to a lecture in this course. Sometimes there will be a mini-lecture with definitions and examples, but sometimes it will just be some reading and prompts to focus your thoughts for class.

- **Submit:** Goformative (link varies per assignment.) prior to class.
- **Value:** 5 points x 20 assignments = 100 points

Classwork

Most class periods are devoted to class discussion or group activities. Students are assessed based on their participation in these activities.

- Participation in every class activity is worth 5 points. There are 22 such activities.
- It is impossible to make up a missed class activity since interaction is a crucial part of them, but 4 of these assignments are dropped to account for unavoidable absences
 - For face-to-face students, an unexcused absence will result in a zero on the corresponding pre-classwork assignment as well.
- **Submit:** Goformative (link varies per assignment.) prior to class.
- **Value:** 5 points x 18 assignments = 90 points

Grading Scale

There are 1000 total points in this class, broken down as follows.

Pre-Classwork Assignments	100 points (20 assignments, 5 pts each)
Classwork	90 points (best 18, 5 pts each)
Lv1 Homework	100 points (best 10, 10 pts each)
Lv2 Homework	160 points (best 8, 20 pts each)
Lv3 Homework (Mastery)	200 points (best 4, 50 pts each)
Quizzes	100 points (best 10 of 14, 10 pts each)
Final Project	250 points (125 pts paper, 125 pts visual aid)
Total	1000 points

A full description of these assignment categories are in the [List of Graded Work](#). Final grades are assigned on a 125 point scale:

- 1000-875 is an A
- 874-750 is a B
- 749 - 625 is a C
- 624 - 500 is a D
- Anything lower is an E

A C or higher is needed to meet degree requirements. Plus and minus grades are awarded based on the strength of the final project, Lv3 homework, class participation, and overall growth over the course of the term. Otherwise, the grading scale is strictly adhered to. Grading in this class is consistent with the UF policies at <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/> (Links to an external site.). You can also find UF's grade point policy at this link.