

Academic Integrity

Students are expected to adhere to the Academic Integrity policies of Roanoke College. All work submitted for a grade is to be your own work! No collaboration is allowed on quizzes or tests. Unless otherwise stated, you may work together on the homework, but should write up your solutions separately. Correct citations must be used on all written work submitted.

Face Mask Policy

The College has issued a mask mandate for the start of the semester that requires masks to be worn in indoor common spaces such as our classroom. You must wear a mask over your nose and mouth in this class. If you arrive without a mask, you will not be allowed to stay and may lose credit for attendance or in-class work. The Bookstore sells masks if you need to make a quick purchase. If the mandate is extended, you will be required to continue to wear a mask.

Attendance & Make-Up Work

Attendance is critical in this course. Many days include presentations and discussions that cannot be made-up. However, you should not attend class if you are ill.

If you have a temperature of 100.4 or higher or other coronavirus symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. Do keep up with all readings, assignments, and deadlines. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about coronavirus symptoms. If Health Services informs you that you should isolate and not attend class for multiple days or weeks, inform me so that we can make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused.

When absent, excused or unexcused, you are responsible for all material covered in class. You will not be allowed to make up work missed due to an unexcused absence.

No late work will be accepted unless you have contacted me prior to the due date and obtained permission to turn in late work. Permission will be granted only for rare circumstances outside your control, such as illness. Do not wait until the last minute to submit work that is due online.

Participation

We will strive to have an active, rather than passive, classroom environment. Failure to attend required classes or be an active participant in class discussions will result in a lowering of your final grade by up to 10 points.

MCSP Conversation Series

The MCSP Department offers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions engage the community to think about ongoing research, novel applications and other issues that face our discipline. Members of this class are invited to be involved with all of these meetings; however participation in at least **three** of these sessions is mandatory.

After attending, submit within one week of the presentation a one page paper reflecting on the discussion. This should not simply be a regurgitation of the content, but rather a personal contemplation of the experience. These reaction papers will be submitted through Inquire; your final grade will be reduced by 2% for each paper not submitted.

Accessible
Education
Services

AES located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Becky Harman, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to

Classroom Etiquette

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Course Components

Major Review

The first part of this class will involve giving a presentation to the class regarding one piece of our review of the mathematics major at Roanoke College; in teams of two or three, you will review your chosen topic and present to the class the main concepts and ideas from that topic. Note that you should focus on the “big ideas” from the topics and the relationship of your topic to other courses in the major. For example, when talking about Linear Algebra, it is less important to spend time on how to row-reduce matrices rather than why you would row-reduce matrices and what that can tell you about a system of equations. This presentation will be graded partly by audience feedback and partly by the instructor. You should target a length around 30–40 minutes.

Note that this is excellent preparation for the Inquisition which is an oral review of the mathematics major, done individually, in front of the mathematics faculty in April. The primary goal of the Inquisition is for the faculty to assess the mathematics program as a whole; participation in the Inquisition is required and failure to participate will result in a course grade of F.

Why Major in
Math?

The second presentation for this class will be a short video (about 3–5 minutes) on why one should choose to major in mathematics. You may talk to each other to get ideas, but you will create these individually. The target audience for this presentation is Roanoke College freshmen or prospective students and it will again be graded by the instructor and audience feedback. The top two will be sent to PR for use on the department website.

General
Presentation

One of the major goals of Math Seminar is to further develop your oral presentation skills related to mathematics. The third presentation of this class will be a presentation on any topic you wish; a good starting place to find a topic will be the Martin Gardner archive of problems and solutions, which will be provided, if needed. This will be done again in groups of two or three and is designed to take about 20–30 minutes. These will be graded again by a mix of audience and instructor feedback. Note that while general presentation skills will be assessed, a major focus of the talk is clarity in the exposition of the mathematics. schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Becky Harman at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

Final Research

The 2015 CUPM (Committee for Undergraduate Programs in Mathematics) of the MAA Project (Mathematical Association of America) guidelines describe a national trend for what concepts and skills mathematics majors should have by the end of their undergraduate program. At Roanoke College, we feel that these guidelines are entirely appropriate and have done a great job of meeting the guidelines from the CUPM. In the 2015 edition, one cognitive recommendation is that “students should learn to link applications and theory” and while we do a good job on each of these individually, there is no class or series of classes that expressly has students link the two. One of the best times to have students link applications and theory is after students have had a lot of development in both, and that time is now.

Your major project this semester is very broadly defined. You will complete, again in groups of two to three, a research project that links applied mathematics and theoretical mathematics. To start, you will reflect upon the courses you have taken and find a favorite topic from either an applied course or a theoretical course and then research and explore the opposite side of the same topic. The result will be a paper and presentation on the topic that you have chosen. To help you reach that point, several checkpoints are present in the class to keep you focused:

Early in the semester you will submit a short list to the instructor with your favorite applications and theoretical results in mathematics, and why you have enjoyed those items. The reviews of the major and why you chose to major in math should help in crafting this list.

You will find research papers in mathematics journals regarding these items and type a short report on the papers that you find (at least one journal article per person is required). This will be due before Spring Break.

Late in March you will give a Background Presentation on your project. The focus here is to make sure that you’ve learned the background material well-enough so that you can proceed forward. It also gives you a chance to practice your presentation skills related to your topic. Note that, at this point, the link between applications and theory should begin to take shape but may not be fully developed.

Three times in March and April, there will be days where, instead of class, you will have an individual meeting with me to discuss progress on your project; a first draft of your paper will be due at the beginning of April.

Your final paper will be due at the time of the final exam time block for this class (Tuesday, May 3); the presentation itself will happen either Tuesday or Thursday of the last week of regularly scheduled classes. You should plan to talk for 20-25 minutes, including allowing time for questions.

Tentative Course Schedule

*Note: Dates in **red** require all class members in attendance and those in **gray** indicate no class meeting. Dates in **blue** indicate small/individual meetings and you are only required to attend your scheduled time.*

Week	Date	Topic
1	Tue Jan 18	Introduction: Course Format, Major Review
	Thu Jan 20	Work Day on Major Review - Zoom meetings available
2	Tue Jan 25	Group Check-ins
	Thu Jan 27	No Class Meeting <i>Major Review videos due by 3pm</i>
	Sun Jan 30	Watch videos and submit questions by 10pm

3	Tue Feb 1	Discussion of Major Review Videos and Introduction to Next Assignments
	Thu Feb 3	In Class Work day on Why Major in Math? videos
4	Tue Feb 8	No Class Meeting <i>Why Major in Math? videos due by 2pm</i>
	Wed Feb 9	Watch videos and submit questions by 9pm
	Thu Feb 10	Discussion of videos, Discussion of General Presentations and Final Project
5	Tue Feb 15	No class Meeting - Work Day on Presentation
	Thu Feb 17	Group Check-ins <i>List of Favorite Applications & Theoretical Results due by 6pm</i>
6	Tue Feb 22	Group Check-ins
	Thu Feb 24	General Presentations
7	Tue Mar 1	General Presentations <i>Research Summary Report due by 6pm</i>
	Thu Mar 3	In Class Work Day - Final Project
SPRING BREAK		
8	Tue Mar 15	In Class Work Day - Final Project
	Thu Mar 17	Final Project Check-ins
9	Tue Mar 22	Background Presentations
	Thu Mar 24	Background Presentations
10	Tue Mar 29	Final Project Check-ins
	Thu Mar 31	Inquisition Prep
11	Tue Apr 5	Inquisition
	Thu Apr 7	Inquisition <i>First Draft due by 3pm</i>
12	Tue Apr 12	Final Project Check-ins
	Thu Apr 14	Final Project Check-ins
13	Tue Apr 19	Final Project Presentations
	Thu Apr 21	Final Project Presentations
14	Tue Apr 26	NO CLASS - This is a Friday Schedule
	Wed Apr 27	Reading Day
	Tue May 3	Final Paper due by 10AM