



## Department of Mathematics

MA 435/535-2C, TR 11:00-12:15

*Syllabus: Algebra II: Modern*

Fall 2021

**Instructor:** Dr. John C. Mayer

**Contact Information:** [jcmayer@uab.edu](mailto:jcmayer@uab.edu)

**Assistant:** Mr. Thomas Sirna

**Contact Information:** [tsirna@uab.edu](mailto:tsirna@uab.edu)

**Preferred Methods of Contact.** Email is the preferred method of contact if you have questions. Please expect a response within 24 hours on weekdays and a slower response on weekends. I will expect the same of you. Include **MA 435-2C** in the subject line of your email for a faster response. Dr. Mayer is available to meet with you virtually via Zoom by appointment or during virtual office hours below. Mr. Sirna is available for the hours indicated below.

### *Office Hours.*

**Mayer Zoom Contact:** 939-460-2319

**Virtual Hours:** to be established by Zoom survey

**Sirna Zoom Contact:** 810-460-5149

**MLL and Virtual Hours:** Mondays 9:00-11:00 AM

### *Instructional Method.*

**Remote.** This class will be conducted virtually using a combination of live and recorded content through Canvas, Zoom, and other tools using the Canvas Learning Management system. Check course Canvas page often for announcements and assignments. Students should reserve the days and hours listed in the Class Schedule for live (online synchronous) course elements, as determined by the teacher. Students will not attend class on-campus.

**Zoom Etiquette.** Please observe the following “rules of the road” for our class on Zoom:

- Be prepared to enter class from our course Canvas Zoom page a few minutes before the scheduled time (in order to provide time to enter from the waiting room).
- Have video ON at all times. Stay in the frame, particularly when taking a quiz or test. (You may turn video off briefly, if leaving the frame for personal reasons.)
- Have audio MUTED unless you are in an active discussion (in order to minimize distracting noises).

**Time Commitment.** This class meets twice per week for 1.25 hours each. In addition to our virtual class time, you should spend about 6 hours per week reading, studying, preparing for class discussions, and completing assignments.

**E-Learning Student Support.** For help with REMOTE technologies:

<https://www.uab.edu/elearning/students>

**UAB Student Laptop Loan.** To see if you are eligible, learn more about process, and apply, visit in Blazernet: [UAB Student Laptop Loaner Program application](#)

**Course Structure.** This course is a “guided inquiry” course. That is, your textbook will be a set of Notes consisting of statements of definitions, axioms, problems, and theorems, and occasional brief explanations. The first chapter is posted to Canvas; check it out before the first class. There will be very little lecture. You will be expected to solve the problems and prove the theorems yourself individually, and in small groups. Please adhere to the “Group Work Rules” below in working with others. Daily small group membership is at the instructor’s discretion and may be random, student-determined, or instructor-determined. Individual and group work will be “processed” by the class as a whole. Processing involves a whole class discussion of the problem, usually based upon one or more student presentations to the class. You will keep a complete record of your achievements, as well as notes taken in class, in your permanent class notebook (physical or virtual). Competence in oral and written communication of mathematics is a major goal of the course.

In a guided inquiry course, when you are working, individually or in a group, you are expected NOT to consult outside sources such as other algebra textbooks, internet websites, smarter friends, or the like. You may work with other students in the class, but if you present the work, you must give credit to all who contributed to it, particularly if you DID consult an outside source. (For example, you would say “Ann and I worked together on this.” Or “I got this argument from Wikipedia.”) This will not diminish your credit, but is required by academic honesty. Moreover, your collaborators are not required to bail you out of difficulty, but may elect to do so.

**Course Objectives.** We will cover the following topics:

1. Clock arithmetic and introduction to axioms, theorems, and proofs.
2. Natural numbers and mathematical induction.
3. The division algorithm and the fundamental theorem of arithmetic.
4. Rings and fields, including modular arithmetic.
5. The ring of polynomials over the integers.

**Learning Outcomes.** Students will

1. Articulate understanding of definitions, axioms, theorems, and proofs as a mathematical process.
2. Articulate understanding of natural numbers and mathematical induction.
3. Articulate understanding of the division algorithm and the fundamental theorem of arithmetic.
4. Articulate understanding of rings and fields.
5. Graduate (MA 535) Credit: articulate understanding of advanced topics.

**Prerequisite: MA 126 – Calculus II**

**Materials.** The Notes for this course will be available on Canvas from the instructor. You will need to bring to our Zoom session every day the following items. A 3-ring binder (actual or virtual) containing labeled sections:

1. Your course Notes, complete to date.
2. Sections titled “Work in Progress” and “Finished Work,” with all entries up-to-date.
3. Your graded Quizzes.
4. You will need a scanning app on your smart phone or computer in order to submit PDF copies of work done for assignments and presentations. Adobe Scan is free:  
<https://acrobat.adobe.com/us/en/mobile/scanner-app.html>

**Course Grades.** Students earn their grade in the course as determined in the tables below. How each grade component is determined is described in the paragraphs that follow. Recall that a grade of **D** cannot count toward the mathematics major or minor.

Grade Element	Points		Points Earned	Course Grade
In-Class Quizzes	70-100		400 points or more	A
Canvas e-Quizzes	50		350-399 points	B
Participation	100		300-349 points	C
Assignments	100-130		250-299 points	D
Final Exam	100		Below 250 points	F
<b>Total</b>	<b>450</b>			

**Participation.** You are expected to participate actively, particularly in small group work and class processing discussions. Mere presence does not constitute ACTIVE participation. Participation points are awarded as in the following table. Note that it is possible to earn MORE than 100 points total for the semester since we will have about 27 class meetings. If so, this will be extra credit. Priority in presenting goes to those students with the fewest points.

Level of Participation	Points
(Merely) Be present in class	1
Contribute meaningfully to class/group discussion	2
Make presentation (partially correct) or contribute substantially to class processing discussion	3
Make good presentation (substantially correct)	4
Make excellent presentation (completely correct)	5

**Class Quizzes and Assignments.** Quizzes will be given in class without prior announcement, and based primarily upon work done within the current and one or two prior class meetings. Quizzes will be of a similar nature to the types of problems, examples, exercises, and theorems encountered in class and in working through the Notes. Assignments are similar, but take-home. You should expect a quiz and/or assignment every week. Each quiz or assignment counts 10 points unless otherwise specified at the time. Together, quizzes and assignments count 200 points toward your final grade. (There are no tests that take a full class period.)

**Canvas e-Quizzes.** Canvas e-Quizzes will be given prior to each class meeting, to be completed before the class meeting. Typically, an e-quiz will be three short answer or multiple choice questions; each correct earns 1 point. Since there are about 27 class meetings, you could easily get extra credit here. The purpose of this e-quiz is so that you will have done some work on new material prior to class. Take the Canvas e-Quiz #1 before the first class.

**Final Exam.** The final exam will consist of a number of problems similar to the major problems and theorems of the course, but not repeating problems in the course. You will be able to select a number of problems to work on from a longer list for the final exam which will be partly in-class and partly take-home. The final exam counts 100 points toward your final grade.

**Grading Rubrics.** Problems on the Quizzes, Assignments, and Final Exam will be graded according to the Scoring Rubric. The rubric is on page 6 of this syllabus.

**Make-up policy.** There are no make-up quizzes or make-ups for absence resulting in decreased participation credit. If you miss a class for a verifiable emergency, necessary medical appointment, or on UAB official business, the instructor will work with you to find an accommodation.

**MA 535 Students Only.** MA 535 is scheduled with MA 435; MA 535 students participate in all class activities described above without distinction being made between MA 435 students and MA 535 students. However, MA 535 students have an additional requirement: graduate student

must earn an additional 50 points, according to the schedule below, for the grade indicated. There will be at least 100 extra points made available for graduate credit (and for extra credit for undergraduates and graduates).

Points Earned	Course Grade
450 points or more	A
400-449 points	B
350-399 points	C
Below 350 points	F

## UAB Policies and Resources.

### Add/Drop and Course Withdrawal.

- Drop/Add: Deadlines for adding, dropping, or withdrawing from a course and for paying tuition are published in the [Academic Calendar](#) available online. Review the [Institutional Refund Policy](#) for information on refunds for dropped courses.
- Withdrawal: To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and receive a grade of W (withdrawn). Failure to attend class does not constitute a formal drop or withdrawal.
- There may be a Pass/Fail option for this course. Inquire later.

### UAB United: Safe Entry to Campus.

- Please go to the [UAB United website](#) for guidance and resources related to our safe entry to campus in Fall 2020, including information on:

[Testing](#)

[Academic resources](#) and in-depth information

[Student Affairs resources](#) to support all students (housing, dining, extracurricular activities, parking, etc.)

[Health and safety resources and recommendations](#) for on and off-campus

Information for [International Students](#)

All students should use the [Student COVID-19 Entry Checklist](#) to see what they have to do in order to enter the campus safely. **Non-compliance with the required items will result in students not being able to remain on campus or participate in any in-person classes, meetings, jobs, extracurricular activities, and events.**

**GuideSafe Event Passport Class Requirement.** Faculty are required to verify all students who are present for in-person instruction or labs have a current Event Passport. Learn more at [UAB GuideSafe Event Passport](#)

**Misconduct.** The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and the administration of the institution must be involved to ensure this quality of

academic conduct. Review the Academic Honor Code and Non-Academic Student Code of Conduct linked below.

- [Academic Honor Code](#)
- [Non-Academic Student Code of Conduct](#)

**DSS Accessibility Statement.** UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. ***UAB Disability Support Services (DSS) has established a process for UAB students to request temporary adjustments based on the impact of COVID-19.***

Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact DSS to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call (205) 934-4205, visit [their website](#), or their office located in Hill Student Center Suite 409.

**Title IX Statement.** The University of Alabama at Birmingham is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit [UAB Title IX webpage](#) for UAB's Title IX, UAB's Equal Opportunity, Anti-Harassment, Duty to Report, and Non-Retaliation policies.

### **Mandatory Masks and Social Distancing Requirements.**

In accordance with CDC guidelines and for the health and well-being of all faculty, staff and students. Students, faculty and staff are required to wear cloth face coverings or face masks at all times and maintain social distancing (6 feet between individuals in traditional classrooms, or, in instructional laboratories and similar settings) while on the UAB campus.

### **Group Work Rules**

1. Each member takes responsibility for his/her own learning.
2. Each member of the group is willing to help every other group member who asks for help.
3. Groups may ask the teacher for help only when all group members have the same question.
4. There is always a further challenge.

## UAB – Algebra II-Modern, Scoring Rubric

	<b>Conceptual Understanding:</b> <i>Interpreting the concepts of the task and translating them into mathematics</i> <i>(Identifying the “core” of the problem)</i>	<b>Evidence Of Problem Solving:</b> <i>The use of task-appropriate tools and problem solving strategies.</i>	<b>Explanation:</b> <i>Using verbal reasoning and appropriate constructions to best convey the solution.</i>  <i>(The explanation flows smoothly.)</i>	<b>Accuracy:</b> <i>Providing a wholly justified solution for the task at hand.</i>
<b>3</b>			Explanation is coherent, and the ideas involved follow logically from previously stated ones.	The solution is completely justified, with no gaps in the argument.
<b>2</b>	Student’s work has demonstrated that he/she has fully identified the major concepts of the task.	The student’s work has demonstrated the strategic use of all task-appropriate tools and problem solving methods.	Explanation is not sufficiently rigorous or something may not immediately follow from what is written.	The solution has one or two minor gaps in justification.
<b>1</b>	Some, but not all, of the major concepts needed were evident.	Not all tools needed for the task are used or the tools are not used in a manner appropriate for solving the problem.	Explanation has multiple gaps or multiple steps need to be inferred.	The solution has major gaps in the justification.
<b>0</b>	Does not achieve minimal requirements for 1 point	Does not achieve minimal requirements for 1 point	Does not achieve minimal requirements for 1 point	Does not achieve minimal requirements for 1 point

Note that it is possible to be lacking in one or more categories (for example, explanation), but receive credit in all other categories.