

# Math 375: Applied Modern Algebra, Fall 2021

**Instructor:** Kevin Milans ([milans@math.wvu.edu](mailto:milans@math.wvu.edu))

**Class Meetings:** TuTh 2:30pm-3:45pm, ARM 315

**Office Hours:** Tu 11:30am-12:30pm, W 2:30pm-3:30pm, and by appointment, in ARM 408H and Zoom

**Webpage:** <http://math.wvu.edu/~kgmilans/teaching/fa21/math375/>

**Welcome:** Welcome to Math 375: Applied Modern Algebra. I have the highest hopes and expectations for your academic achievement this semester. It is my responsibility to ensure that you have all the tools you need to succeed, including quality instruction and timely feedback. It is your responsibility to use these tools to learn the course material. Hard work and dedication to the course are necessary components of success, but your course grade is ultimately based on how well you understand the course material as measured by quizzes and tests.

Mathematics can be a difficult subject to learn. It is inherently cumulative: the topic we learn today may (and often is) used throughout the semester and in later courses. Resolve now to learn the material thoroughly. The good news is that you don't have to learn alone. I am more than happy to answer your questions during office hours and via email. You are encouraged to work with other students to master course material.

**Learning Outcomes and Course Goals:** Students will understand basic principles of counting, set theory, graph theory, optimization and network flows, group theory, and coding theory (as time permits).

**Prerequisite:** Math 156

**Textbook:** *Discrete and Combinatorial Mathematics*, Fifth Edition, by R. P. Grimaldi. (*optional*); *Introduction to the Theory of Computation*, Second Edition, by Michael Sipser, (*secondary; optional*)

**Homework:** Homework is a crucial part of learning mathematics. Homework will generally be assigned on Tuesdays and due the following Tuesday. Homework is evaluated on *completeness*, and, depending on availability of resources, *correctness* on selected problems.

Your homework is expected to be neat and conform to accepted standards for professional work-products. Handwriting must be clearly legible, and margins must be respected. Except for excused absences, late homework is not accepted. Your lowest two homework scores are dropped.

**Permitted Calculators:** On quizzes and tests, you may use a permitted calculator. Simple 4-function calculators and scientific calculators allowed by NCEES testing policy are permitted (e.g. TI-30X, TI-36X). Programmable calculators, or use of cell phones as calculators, are not permitted.

**Quizzes:** A quiz corresponding to the latest homework will generally be assigned on Thursdays. You may use a permitted calculator; no other aids are allowed. In accordance with the make-up policy, your lowest two quiz scores are dropped.

**Tests:** There will be 3 tests, each covering between  $1/4$  and  $1/3$  of the course material. You may use a permitted calculator and one 8.5 by 11 inch sheet of *handwritten* notes during each test. No other aids are permitted. The tests are scheduled for Thurs. Sept. 16, Thurs. Oct. 21, and Thurs. Nov. 18. In accordance with the make-up policy, your lowest test score will be replaced by your score on the final exam if doing so will help your grade.

**Final Exam:** The final exam is Friday, Dec. 17, 8:00am-10:00am. All students must take the final exam during the scheduled exam period, unless specifically exempted by university rules. You may use a permitted calculator and one 8.5 by 11 inch sheet of *handwritten* notes during the final. No other aids are permitted. The final exam is cumulative.

**Attendance:** Attendance is expected. Leaving class early or arriving late is disruptive and counts as an absence. Failure to take quizzes/tests and failure to collect quizzes/tests when returned is considered evidence of absence. Students who miss 3 or fewer classes earn an attendance bonus of 2%. All absences, including those related to university Days of Special Concern, are counted against the attendance bonus.

**Expected Classroom Behavior:** Talking with your neighbors, reading material unrelated to the course, listening to audio entertainment on your headphones, texting, and using a laptop or cell phone are not permitted in class.

**Classroom Participation:** A bonus of up to 2% is possible for excellent classroom participation. The bonus is to be earned cooperatively by all students in the course, and all students receive the same classroom participation bonus. Activities that have a positive effect on the classroom participation bonus include asking and answering mathematical questions. To earn a high classroom participation bonus, a large portion of the class must ask or answer questions occasionally. Activities that are not permitted in class have a negative effect on the classroom participation bonus.

**Grading Rubric:** Course averages are converted to letter grades according to the scale on the right. The instructor reserves the right to lower these thresholds.

Homework	15%
Quizzes	15%
Tests	$15\% \cdot 3 = 45\%$
Final Exam	25%
Total	100%
Attendance Bonus	2%
Classroom Participation Bonus	up to 2%

A: 90–100	B: 80–89.9
C: 70–79.9	D: 60–69.9
F: 0–59.5	

**Make-up Policy:** Excused absences that result in a missed work are, to the extent possible, accommodated by dropping the assessment (homeworks/quizzes) or by final exam score replacement (tests). Excused absences have the highest priority for dropping/replacing an assessment. In the event that a student's excused absences exhaust the provisions for dropping/replacing, make-up work may be required. Students must notify the instructor of excusable absences as soon as possible.

**Regrade Policy:** Regrades may be requested by submitting the original work with a written explanation of your request up to 1 week after the work is returned. Regrade requests are to be used to correct errors in grading. Regrade requests that challenge the amount of a deduction are usually not considered, since deductions for common mistakes are applied uniformly to all students. When regrading, the entire problem(s) in question will be reviewed, and all discovered errors in grading (including any that previously favored the student) will be corrected. The resulting grade may be higher than, equal to, or lower than the original.

**Academic Integrity:** You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will, at a minimum, result in an academic penalty of a score of zero on the assignment or test in question. Additional disciplinary measures are possible. For more information, see the university's Student Conduct Code.

**COVID-19 Statement:** WVU is committed to maintaining a safe learning environment for all students, faculty, and staff. Should campus operations change because of health concerns related to the COVID-19 pandemic or other campus-wide emergency, it is possible that this course will move to a fully online delivery format. If that occurs, students will be advised of technical and/or equipment requirements, including remote proctoring software.

In a face-to-face environment, our commitment to safety requires students, staff, and instructors to observe the social distancing and personal protective equipment (PPE) guidelines set by the University at all times. While in class, students will sit in assigned seats when required and will wear PPE according to current University guidelines. Students who fail to comply may be referred to the Office of Student Conduct for sanctions.

COVID related absences fall under the University attendance policy found online. As detailed in the policy, a student who becomes sick or is required to quarantine during the semester should notify the instructor. The student should then work with the instructor to develop a plan to complete the course learning outcomes while he or she is absent.

### **Closing Thoughts:**

- Every element of the course that affects your grade is listed in the grading rubric. There are no hidden sources of extra credit. Please do not ask me for extra credit opportunities at the end of the semester. There are none.
- Learning mathematics is only possible through practice. Following along as someone else (e.g. your instructor or your tutor) works a problem is different from actually doing it yourself. Moreover, solving problems at your own pace is different from solving problems under the pressure of a quiz or a test. To do well on quizzes and tests, you should be able to solve the corresponding homework problems *with confidence*, correctly and efficiently on the first try.
- Supplementary tutors are a great source of help, but they are not a substitute for also visiting the instructor during office hours.
- To do well, the average student should plan to spend at least *10 hours per week* studying outside of class. The amount that you need may be higher or lower depending on your mathematical background and mastery of prerequisite material.
- It is very easy to trick yourself into thinking that you understand a concept in math when you really don't. Be honest with yourself about what you know and what you need to work on.
- The above notes are intended to give an accurate sense of the challenges ahead. I do want to see you succeed, and I will do everything that I can to help. However, the ultimate responsibility for your academic success lies with you.