

## Math 417 F3M MWF 11 – Online Course Organization Spring 2021

**Instructor and opening statement:** Prof. Bruce Reznick, 327 Altgeld, 333-4284, email: reznick@illinois.edu. My phone has voice mail and I frequently check and reply to my email, including weekends.

We are in a new teaching environment this year under difficult circumstances. I had not taught online before 2020 and I had not used Moodle. I am well aware of the stresses that you and all undergraduates have undergone in recent months. You need to let me know if there are aspects of this course which aren't working well for you. **I hope we can all be patient with each other and listen carefully as we try to figure this out together.**

### How things will work:

This is what happened in the Fall, and it seemed to work well.

(i) I will narrate a “Beamer” version of each lecture and email it to you early in the evening before each class meeting. (Beamer is the LaTeX version of Powerpoint.) I expect these lectures will be around 30 minutes. You should take notes on the lecture, and you can stop it and repeat sections that go too fast (I hope there won't be many.) My handwriting isn't very good, and the typed version will be clearer. You will get a “pauseless” version of the beamer slides in the email that contains the link to the video. In addition, there will be weekly summaries of all slides.

(ii) You can then email me any questions you might have on the lecture, before the class. Be assertive and fearless in this. I will not mention your name when I'm talking about your questions in class. You will also get credit for this (see below). **This is one of the most important parts of the course!**

(iii) The class period will be essentially an office hour for discussion of the material. I'll try to answer the questions you have sent me and maybe give additional examples. On Mondays and Wednesdays, there will be some problems for you to work on in breakout rooms for about 15 minutes. This active learning component is ungraded. Your input will be important in determining how this is shaped as well. I have used active learning as a way of revisiting issues that caused problems in the homework.

For example, I hope to have the first lecture available to you by 6 pm on Sun. 1/23, then you will have until about 10 am on Mon. 1/24 to send me your comments. Our first class will be a Zoom session at 11 am on 1/24, which will also be recorded and put into Moodle.

I recognize that you might not be able to attend some (or all) of the synchronous class meetings. They will be recorded and links sent to you, along with copies of any slides used. My observation in the Fall was that the students who were able to come to class “live” were more successful in learning the material.

If this plan doesn't work, I'm willing to try other things. I will be available for individual (or small group) office hours if you like; usually, we finish synchronously after about 40 minutes and I stay around and talk to people as long as they want. I plan to upload various useful and hopefully interesting supplemental links as well. **Your feedback is essential on this, and all aspects of the course.**

**Text and Syllabus:** The text is *A first course in abstract algebra* by John B. Fraleigh. This will be supplemented with free resources, including

<http://www.math.uiowa.edu/~goodman/algebrabook.dir/algebrabook.html>

Let me know if you find something else useful on line and I can share with the class. The goal of Math 417 is to study groups and rings. These are mathematical objects abstracted from examples such as the integers mod  $n$ , permutations and symmetries and polynomials. Material will be taken from chapters one through four of the text, but I don't expect to cover it all. There will be supplemental number theory which will enhance your understanding of the algebra.

This class is an experimental section (offered three times before), dedicated to serving math majors who do not intend to go to graduate school in mathematics. The amount of material we cover will depend on how well I can explain it and how well you can learn it.

**Homework Policy:** It is an implicit assignment to read ahead in the textbook before the lecture. This makes them more comprehensible! Written homework will be assigned to be due weekly. The class will vote on the day. Homework assignments will be emailed to you separately and also posted on Moodle.

Always consider writing more than one draft of your assignment. Since you are uploading a scan to Moodle, please make sure that your uploaded text has a sufficient contrast from the background. You are expected to spell correctly and write complete, grammatical sentences when possible in this and all your University assignments.

My usual policy is that homework solutions will be distributed when the assignment is due. No late homework is accepted, but the lowest two homework scores (possibly zero) will be omitted in computing your homework average. In rare instances, you may be excused from an assignment, but the dropped scores are intended to cover ordinary illnesses, weddings, etc. Again, this might change, depending on the realities of the semester.

It is my policy not to give specific homework help on pending problems. But if you ask a question in class or in email, I can further explain to *everybody* the underlying mathematics.

**Collaboration in studying and working the homework is strongly encouraged! Collaboration without comprehension is a waste of time.** You may be able to find websites which help you understand the material in this class. Don't copy homework solutions from online sources. (I know how to google). **If you do not have a study group, please let me know, and I'll see what I can do.**

**Homework Content:** Most homeworks will be a combination of various types of problems. (i) There may be occasional problems from the text with the answer in the back of the book. These will be corrected but will not count in the homework grade. (ii) There will be exam-type questions, marked by the rubric ( $\mathcal{E}$ ). (iii) There will be a few other questions that might be too long for a test, or involve too much computation, but which are fun to work out.

The course will have a grader, but I will also read through your assignments and make the final grade determination.

**Exam Policy:** I usually give three Hour Exams in my courses, but exams have been the most stressful aspects of online instruction, so I have permission to give two Hour Exams instead.

These will be “take-home” open book, open-notes exams, with no specific time limit, but intended to be the length and difficulty of a typical in-class exam. The problems will resemble homework problems. Exams will be e-mailed to you on a Thursday evening, and due at Saturday midnight. (Class on Friday would be cancelled.) I will not be using Proctorio or other online proctoring service. If I get reports that there are problems with this procedure after the first Exam, I reserve the right to change this policy. Exams will probably exist in multiple versions, with somewhat different, but equivalent sets of problems.

We will have a Final Exam, which would be twice as long as (and somewhat harder than) the Hour Exams. There would be multiple versions of this as well. I don’t know yet when the actual scheduling of the exam will be. Technically, our Final Exam period is Thu 5/13, 1:30-4:30 pm.

As an alternative to the Final Exam, you have the option to write a 10 page original Term Paper on a subject of your choice related to algebra or number theory and your own interest as an alternative for the Final. This will require a separate conversation with me. Under the circumstances, I will approve any reasonable proposal that reflects your personal interests and has some ties to the material of the course. Nobody took this option in the Fall.

**Participation:** This portion of the grade is the easiest to achieve. To receive full credit, send me at least ten emails during the semester with questions about material from the lectures or the reading from the book (but **not** the homework or exams). Put “417 Class Participation” in the subject line! I do this in all my classes now. Math majors tend to be both somewhat shy and somewhat reluctant to admit publicly when they don’t understand something. Your questions are valuable in helping me structure the synchronous part of the class.

**Grading Policy:** Each Hour Exam counts 20%, the Final Exam or Paper counts 40%, the Homework counts 20% and the Participation counts 15%. The lowest 15% is dropped. (A missed exam **cannot** be dropped from the computation of the grade.) All grades are numerical. The highest possible grade cutoffs are: A/B – 90%, B/C – 80 %, C/D – 70%, D/F – 60%, by which I mean “A-/B+”, etc. I will try to keep you posted on any curving as the semester progresses. There are two exceptions to the numerical grading: anyone who takes all Hour Exams and scores 96% on the Final gets an A of some kind and anyone who scores 75% on the Final will pass. My experience is that these exceptions rarely make a difference. **Always keep in mind that I am grading your work, I am not evaluating you as a person.** I know that assessment is an important part of the educational process, but I want my courses to be about the mathematics, not the “sorting hat”. In the three previous versions of the course, virtually everyone got at least a C.

**Philosophy and acknowledgment of power realities:** When I was an undergrad math major, abstract algebra was the math area that took me the longest to “get”, but once I did, I really enjoyed it. I look forward to helping you “get” abstract algebra as well. A course is designed for its students, not its instructor. Education is not a zero-sum game when done correctly. I do not consider you my adversaries, and hope the feeling will be mutual. Become active, not passive in Math 417: the more you put in, the more you will get out. Let the ideas of this course get under your skin and visit your dreams. These are serious steps towards understanding.

One of the first books I read about education pointed out that a good teacher must “be friendly without being a friend”, and so I should discuss some uncomfortable issues explicitly. The professor/student relationship is inherently asymmetric. One person must formally evaluate the other’s work, and there are typically major disparities in age and experience; and only one of us here looks like the professor in a cartoon. Friends don’t grade friends. Nonetheless, cordiality and mutual respect must prevail.

Finally, although I have never had to defend myself against racism or misogyny or other group-related bigotry, I have some experience at being “othered” by my classmates. Fifty-one years ago last Fall, I started college at Caltech. I was 16. I looked like I was 12. I **do** know what it’s like to have the people in the room look at you like you don’t belong. I **do** know what it’s like to be bullied. Both are awful.

I will tolerate none of that in Math 417. Everyone here (and I include myself) must treat everyone else here with kindness and respect. Let me know if this fails to happen.

**The success of each of you is equally and personally important to me. I will do what I can to help you achieve it. I can’t wait for the semester to begin.**