

Math 347 C2M MWF 12-12:50, 445 Altgeld Course Organization Spring 2022

Instructor and opening statement: Prof. Bruce Reznick, 327 Altgeld (soon to move to 374 Altgeld), 217-333-4284, email: reznick@illinois.edu. My phone has voice mail and I frequently check and reply to my email, including weekends.

Math 347 might be the most important course you will take in the department. It has a dual purpose: part of it is to cover some important mathematical concepts which are essential to more advanced 400-level math classes. But part of it is to help teach you how to construct proofs and write them so you will become a mathematical insider.

We are in an uncertain academic environment. This document is written under the assumption that we will mostly be meeting in person. I want you to know explicitly that I am aware of the stresses that you and all undergraduates have undergone during the Pandemic. 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 work: (i) We meet in class MWF 12 and I lecture, but also be as responsive as possible to class questions. You will know in advance the portion of the notes that I expect to cover, but the amount I cover will also depends on the class reaction. I will keep a pace so that you understand what is going on. There will be ungraded active learning worksheets once or twice a week. I always take requests for additional topics to be covered and have used active learning as a way of revisiting topics and difficult homework problems.

(ii) I encourage you to email me any questions you might have either before it's covered in class or afterwards. 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) Not sure how office hours will work. Depending on the class, it might be easier to schedule individual or group zoom appointments. I can do this most evenings too. We will decide later.

(iv) You also have a Merit Discussion meeting Tuesday 9-11am, run by Ms. Mina Nahvi, who is a PhD student in the department and an experienced Merit instructor. These meetings will go over the material in the MWF lectures with worksheets and discussions and maybe even new material, depending on how things go. If you have comments about the course that you do not want to tell me directly, you can filter them through Mina, who will leave your name out of it!

Text and Syllabus: The text is *An introduction to abstract mathematics* by Neil Donaldson and Alessandra Pantano. This might be supplemented with free online links; let me know if you find something else useful online and I can share with the class. I expect to cover the entire text and more; you will have some input into what the additional topics will be. Your feedback is essential on all aspects of the course.

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, at Saturday midnight, on Canvas. Homework assignments will be emailed to you separately and also posted on Canvas.

Always consider writing more than one draft of your assignment. Please make sure that your uploaded text has a sufficient contrast from the background so that it is easily readable. You are expected to spell correctly and write complete, grammatical sentences when possible in this and all your University assignments.

Homework solutions will be distributed when the assignment is due. 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.

My *covid-inspired* policy is that late homework submitted after the solutions have been distributed will count (but at a reduced value, multiplied by .6), as long as you don't simply quote the solutions word for word. It is always good practice to work through homework questions as preparation for the exams, and I want to encourage this as much as possible.

It is my policy not to give individual 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.** I hope that the Merit Section will have some elements of a study group.

Homework Content: Most homeworks will be a combination of various types of problems. (i) There may be some problems from the text. (ii) There will be exam-type questions, marked by the rubric (\mathcal{E}) (these occur throughout the semester and replace "sample exams".) (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.

Exam Policy: My current plan is that there will be four Half-Tests during the semester. These will be in class, open book, open-notes exams. I expect that you will have plenty of time to do the problems and have time to check your answers. (Checking your work is a very important part of being a mathematician!) Exam problems will resemble homework problems.

We must have a Final Exam, which would be somewhat harder than the Half-Tests and of an appropriate length. Our Final Exam period is Thursday, May 12, 7:00-10:00 pm.

Participation: This portion of the grade is the easiest to achieve. To receive full credit, send me at least five emails during the semester (at least a week apart) with questions about material from the lectures or the reading from the book (but **not** the homework or exams). Put "347 Class Participation" in the subject line.

I've done this in all my classes for several years. Math majors tend to be both somewhat shy and also somewhat reluctant to admit publicly when they don't understand something. Your questions are valuable in helping me structure the class.

Grading Policy: The exams during the semester will add up to 60% (at 15% each), the Final Exam counts 30%, the Homework counts 15% and the Participation counts 15%. The lowest 20% 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. Your grade in the Math 199 portion of the course will be based on attendance, participation and preparation and given in coordination with Ms. Nahvi.

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”.

Philosophy and acknowledgment of power realities: A course is designed for its students, not its instructor. My job is to create an optimal environment for you to learn. I will do anything reasonable to help you succeed in the class, except for redefining “success”. 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 347: 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 need to discuss some uncomfortable issues explicitly: The professor/student relationship is inherently asymmetric. One person must formally evaluate the other's work, there are typically major disparities in our 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-two years ago, I started college at Caltech. I was 16. I looked like I was 12. I *do* know what it's like to have people in the room stare 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 347. 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.