

MEMO TO OUR STUDENTS

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Dear Students,

During this extraordinary time, the Mathematics Department has been working hard to ensure that our courses, especially the courses in the Calculus sequence, will be of the highest possible quality this Fall.

After receiving the memos sent by President Gutmann and Provost Pritchett to the Penn community a few weeks ago on the possible scenarios for the coming academic year, the Mathematics department initiated a *Calculus Planning Committee* to prepare for the Fall semester, whatever the scenario. This was done with the explicit charge to maintain high academic quality of instruction while being sensitive to the many challenges faced by our diverse student body.

Now that we understand what the Fall semester will look like, and in the interests of transparency and order, we wish to share the results of the planning exercise and give you a preview of what Math 103, 104, 114 and 240 will look like beginning this Fall.

These changes are not minor; they are significant and require a great deal of work on the part of the faculty. We are happy to engage in that hard work in order to give you a better Calculus course experience, to modernize the curriculum, to increase equity and access, and to reduce barriers to learning.

What is a summary of the major changes?

In brief, they are:

1. **Coordinated sections.** All sections of a course will have the same pace, structure, and lectures, independent of who is the instructor. This will give students a more uniform experience, less dependent on getting a particular prof.
2. **Asynchronous video lectures.** All lectures will be delivered via short videos. This should help you manage your time by allowing you to watch lectures whenever you wish.
3. **Active learning.** The normal lecture time will feature active problem-solving or other activities, dependent on the instructor. This should give you a chance to interact with your peers and your instructor more.
4. **No midterms.** Midterms are being replaced with quizzes at the rate of three per month (see below for details on that). There will still be a final exam, but it will count for less than it has in the past. This should lower midterms-week anxiety.
5. **No required textbook.** We are developing our own video-based “texts” and generating additional materials to help serve as resources, including replacing the “MyMathLab” with autograded practice problems on Canvas. This will save you an unpleasant expense.
6. **Rescheduled recitations.** Since you are spending time watching lectures online, class will not meet as often. In particular, recitations with your TA will take place within the lecture period. This means no more 8:00am recitations.

For details, keep reading.

What will a typical week look like?

You will meet with your instructor once per week for an hour in groups of 60, during which time you will be engaging in active learning or problem-solving. This is “class time”, even if we are not together in a classroom.

You will meet with your TA in subgroups of 20 for one hour per week, going over questions or problems.

Before class time, you will watch about 80 minutes worth of short videos covering the basics of the material for that week. There will be a homework assignment based on this that you will do through Canvas, that assignment being automatically graded, so you know how you did. Check with your instructor for policies on collaboration for the homeworks.

Most Fridays will involve a quiz covering the week’s material. It won’t be too long (less than an hour). Check with your instructor for details on how the quizzes will be administered.

Each week, there will be an optional review session that will be inclusive among the different sections. Different instructors will take turns doing these.

How do grades work?

Check the syllabus on canvas for details on what the components are (homeworks, quizzes, participation, etc.) and what counts for how much.

Quizzes will be given on Fridays, for three out of four weeks per month. One Friday per month will be a “redo” day, where you have the option to retake a different version of one of the prior three quizzes and improve your grade. If you miss a quiz for whatever reason, this will make sure you’re not penalized.

There will still be a final exam, but it will count for only 20% of your grade. The Friday quizzes will total 60% of the grade and the other class activities (auto-graded homework, in-class activities, other homework) will count for the other 20%.

What are the advantages of this new structure?

- *Less stress; more fairness.* With more low-stakes quizzes and periodic re-takes [see above], your entire grade doesn’t depend on a single high-stakes exam.
- *Better time management.* With no 8am recitations and lectures viewed when you want, you’ll have more flexibility in how your week goes. The weekly structure of the course will motivate you to stay current on the material.
- *Less variance between sections.* Since everyone views the same set of lectures, you don’t have to worry as much about which section you get into. If your friend is in a different section, you can still study together.
- *Less expense.* There is no expensive required textbook.
- *Modern curriculum.* Since we’re not bound to a given text (typically produced for mass-appeal), we can tailor our instruction to what is best for Penn students. We’ve been working hard to

modernize the curriculum to show you examples and applications of relevance to you and your fields of study.

Will my course be taught by a faculty member? Of course. Our faculty remain committed to teaching our students well. We look forward to meeting you!

Who will be teaching what this fall? Each course will have a lead coordinator, responsible for managing the different sections and coordinating lectures and other materials. Your section may not yet have an instructor assigned: stay tuned. But the coordinators are already very hard at work setting up your course. For Fall 2020, they are:

- MATH 103 : Nakia Rimmer
- MATH 104 : Philip Gressman
- MATH 114 : Robert Ghrist
- MATH 240 : Dennis DeTurck

These are all award-winning teachers, working to make sure you have a great experience this Fall in Mathematics.

How can I prepare? If you've been away from math for a while (i.e., you didn't take a precalculus or calculus course during your senior year of high school) it would be a good idea to review material from the last course you took – brush up on those derivative formulas and trig identities! But the most important thing is to be prepared to hit the ground running in one of these rigorous, fast-paced courses. It will be important for you to keep up with the flow, and to devote some time to learning mathematical concepts and/or practicing techniques nearly every day.

Which course should I take? The Mathematics Diagnostic test that you are taking online this summer will give reasonable guidance as to which course you should take (among 103, 104 and 114) this Fall. But generally, if you had AB Calculus in high school you should begin with Math 104 (or 110 if you are a Wharton student), if you took BC calculus and got a 5 on the exam (or are very confident in your ability) then take 114. Work with your advisor to select the appropriate course, and if there's real doubt, contact the Math Department.

How will this work with my disability? In many ways, the new format should provide enhanced opportunities for students with disabilities to take in the lectures at their own pace and repeat sections if necessary. As usual, instructors in the courses will follow the recommendations of the Student Disabilities Office regarding appropriate accommodations for the weekly quizzes and the final exam.

I'm in a different time zone? How can I participate? Except for the scheduled class meetings (2 hours per week), your ability to access the lectures and other course materials will be independent of where you are located. We will be surveying students in each section to determine whether a recitation section at an alternative time would help some students with time zone issues.