

Tufts Mathematics Course Plans Booklet – Fall 2020
as of 7/14/2020

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Math 19-01: Social Choice, Garant

This section will be hybrid. Most lecture material will be covered online but exams will be held in-person on the Medford campus (though some exceptions may be allowed).

Some lecture material will be covered in videos (which I will pre-record), that students will work through asynchronously. And some lecture material will be covered during class meetings.

Class will meet T/Th 10:30 - 11:45 am, online (using Zoom). In addition to some lecture material, class meetings will also include problem sets that students can work on together, as well as regular quizzes.

Students will hand in assignments and/or quizzes once or twice a week, uploaded to Canvas, and these will be graded.

There will be at least two exams (one midterm and a final). There may be an additional midterm. Midterms will happen during classtime.

Math 19-02: Social Choice, Faubion

I will use a combination of synchronous and asynchronous. I will make videos and supplement them with Zoom class activities/ problem sessions. I can do fully asynchronous if necessary.

Math 21-01 &-02: Intro Statistics, Garant

These 2 sections will be hybrid. Most lecture material will be covered online, but exams will be held in-person on the Medford campus (though some exceptions may be allowed).

Students will asynchronously work through video lectures (which I will pre-record). Class time (T/Th noon - 1:15 pm for section 1, and W 1:30 - 4 pm for section 2) will be used for online Zoom meetings where students will work together to complete problem sets. Students will submit two assignments per week, uploaded to Canvas, and these will be graded.

Students will have the option of learning how to use R, a free, statistical software package. While I encourage all students to learn R, it will not be required.

There will be 3 exams (two midterms and a final). The midterms will happen during the open block on Fridays, 1 - 2:20 pm.

Math 21-03: Statistics, Kaufmann

I intend to teach Statistics remotely. I will video lectures (6 -9 ten-minute videos each week) and put a link for them on Canvas. The lectures will stay on Canvas for the entirety of the course, so student time zones will not be a problem. I am planning on 2 midterms and a final exam which will be on Gradescope. I'm planning on doing a required live problem session on Wednesdays from 10:30 – 11:20 (that's one of the times the class is scheduled to meet). I'll answer questions and give them one problem that they will need to turn in. There will be 3 homeworks due each week. They will also have to turn in homework to a grader. I haven't decided on a text yet, but I'll do that soon.

Math 32-01, -02, & -03: Calculus I, Hasselblatt, Hening, Ruane

Format:

- We have asynchronous material already made so we will not be spending the scheduled time lecturing. These are in the form of short videos generally divided into short lecture videos and worked example videos.
- We would like to schedule one-hour, small group live sessions that are mandatory throughout the week. Ideally these would be 10 students at a time and each student would be required to attend 1 of these each week.
- The students would be given problems to work during the session as well as problems to work after the session to write up neat solutions for that will be graded. The students will upload their notes from the session as well.
- We will have 25-30 of these hours scheduled each week at a variety of times to accommodate students in other time zones and to help with possible class conflicts for students that are here on campus. We expect to have some number of these live sessions in person.
- The idea is that in that one hour, each student should be called on by name to engage in the conversation. They would be strongly encouraged to turn on their video during this session. The students would be expected to watch the content and be ready to work once in the session.
- We are also considering alternating turns (among the three faculty) at giving a live “overview” lecture for the week that will be recorded for those that cannot make it. I would do mine on Sunday evenings for example.
- We would be using MyLab for quizzes and homework.
- We would give coordinated exams but the number and format has not been decided. We will be putting less emphasis on these exams and more emphasis on engagement and participation in the live sessions as well as the neatness and correctness of the weekly hand-in work.

Math 34-01, -02, -03, & -04: Calculus II, Borgers, Bozlee, Murphy, Kaufmann

One hundred percent online.

Each week will be based on approximately 60 minutes' worth of asynchronous video lectures posted on Canvas.

Class meetings (led by the instructors) and office hours (by the instructors and by the TAs) on Zoom. We will ask students to attend their assigned class meetings, but allow any student to come to any office hour. We are thinking of 2 office hours per instructor of Math 34, plus one office hour per TA, for a total of 12 Math 34 office hours in addition to the 3 class meetings.

During class meetings and office hours, students will work on the (weekly, substantial) worksheets, in smaller groups, aided by the instructor and/or TA, and they will ask questions (anonymously, using the Whiteboard function).

We will schedule office hours to accommodate students in very different time zones.

We will not need the scheduled recitations as each office hour will be like a recitation.

We will have several exams, and have discussed take-home (open books, open notes, open internet) exams with a short (24-hour) window, but we will discuss the details again later in the summer.

Math 42-01: Calculus III, Gonzalez

1. Video lectures of relatively short duration will be uploaded to Canvas well ahead of the week during which the topic will be covered in class. (By "well ahead" is meant one or two weeks ahead, although ideally, we should have a number of them already uploaded by the end of summer.) The number of videos corresponding to a topic such as Stokes' theorem, and their duration, will vary depending on the topic. Students will be required to watch the videos. By "required," we mean be responsible for the material covered in the videos as well as the corresponding section in the text.
2. Each instructor will hold four 50-minute classes each week for their sections. Students enrolled in each instructor's section (and their section only) will be required to sign up for one of their classes and we will cap the enrollment of each class. (The cap will probably be something like $\frac{1}{4} \times (\text{instructor's total enrollment}) + 8$.) The purpose of the classes would be to go over the some of the theoretical material in the videos, give examples, solve problems, and invite class participation via (say) short duration online multiple-choice quizzes, or maybe calling on individual students who are willing to solve problems. Each instructor can choose to hold our classes online or in a hybrid format, or to do a combination. If possible, the instructors will each spread out their classes in order to accommodate students in other time zones. All classes will be recorded, and the recording uploaded to Canvas.
3. Each of our TAs will hold 3 recitation classes per week, where they go over the homework and answer questions. This means that each student gets to attend one class and one recitation (i.e., 2 official contact hours) per week, in addition to being required to watch the videos.

4. The instructors and the TAs will also have official office hours to answer individual students' questions and concerns.
5. There will be two midterms and a final. The exams will all be online, offered during a 24-hour window, and each student will be given 4 hours to turn in their scanned exam after downloading it from Canvas. Extra-time students will be given 6 hours.
6. The exams will be open book, and more specific exam mechanics will be determined before the semester begins.
7. Students will be required to do regular online homework on MyLab Math, as well as weekly written assignments created and graded by the TAs.

Math 50: Intro Programming for Computational Mathematics, Andrei

This course will be held in a combination of synchronous and asynchronous settings. There will be prerecorded videos for the student to watch before each class meeting. Each class meeting will be held on Zoom at the schedule meeting time defined on SIS, and will contain class activities. The current plan is to have quizzes and assignments. This might change to contain quizzes, less assignments, and a final project. The class will prepare students who plan to take, or are currently taking, courses that require programming here in the mathematics department.

Math 51: Differential Equations, Nitecki

Current plan is:

Prerecorded lectures available asynchronously before class, with a brief response to the lecture (questions, comments) due before class;

Synchronous online class meetings at the scheduled time (MWF 10:30-11:20) devoted to clarification, discussion and problem-solving. Each student will be required to attend one of these three lectures each week either in person or via Zoom. The class will be divided up into three groups so that we can keep the size under 40 in case we do get to meet in person (which I prefer). Students will be expected to have watched the pertinent videos before coming to lecture and expected to answer questions about that material during the class that will be handed in.

They will attend one of the scheduled recitations each week.

Office hours (by myself and TA, separately) for individual attention.

Math 61-01: Discrete Mathematics, Teixidor

Currently scheduled on Tuesday and Thursdays, 10.30-11.45. Class participation will be required. My hope is to teach in-person but if necessary I will go live on zoom so that remote students can take the class (at the same time). Some lecture material may be pre-recorded so that most of the class time can be devoted to discussion.

Math 70-01, -02, -04, & -05: Linear Algebra, Faubion, Tasissa, Quinto, Hu

Math 70 instructors met on June 3 to discuss how we would like to teach in the fall. This is tentative and is predicated on it being safe to teach in person, at least some of the term. Moreover, we have different risks if we catch COVID-19, and some of us would be more limited than the others.

We plan to make videos (starting in the summer and sharing the work) for some of the most important topics. The videos will include the theory and topics we would expand on in class. This will allow us to spend more time in class on examples and how to understand the theorems (and overviews of the proofs).

Abiy: I am flexible to teach in person or online. My current plan is to teach the course online. Every lecture will be synchronous on Zoom at the scheduled time slot. The class lectures will be recorded and made available afterwards. I plan to supplement these lectures with videos. If the need arises, the course can be made fully asynchronous.

Xiaozhe: I am flexible to teach online or in person, depending on the overall situation. Currently, I plan to teach the course online and it will be a hybrid of asynchronous and synchronous format. Basically, I plan to record short videos to discuss the main topics, concepts, and simple examples. During the scheduled lecture time, I will spend about 20mins to give an overview and go over more elaborated examples. If the whole situation is safe and allows, I would like to teach in person if possible. One way to do this would be to divide the students into 2 groups that would alternate attendance so we don't have to meet in an auditorium.

Zac: I can teach either online or off I would prefer offline (a.k.a. in person). If I do this, I will want a room with a projector. If online, I will use a combination of synchronous and asynchronous. will make videos and supplement them with Zoom class activities/ problem sessions. I can do fully asynchronous if necessary. Whether online or off, I will be part of the video making effort.

If I teach in person, I will still provide short videos, record my lectures, and teach on the iPad. Therefore, the classroom should have a projector at least.

Math 87: Mathematical Modeling, McNinch

I plan to have the course content fully online. I intend that “lecture content” will be asynchronous, but I intend to have weekly “problem sessions” that are interactive and depend on the asynchronously provided content. All students will be expected to come to both scheduled class meetings for problem sessions each week.

- Under ideal conditions, I could imagine having the problem sessions (or more precisely: some of the problem sessions) in person.
- I’ll schedule several problem sessions each week, with some choice for students about which to attend. I’ll schedule some (most) of these with the “block-schedule time” for the course – so for most students those times will be available. I imagine possibly having problem session in a different slot to try to account for time-zone differences.

Math 123: Mathematical Aspects of Data Analysis, Tasissa

My current plan is to teach the course online, however I am open to having in-person interaction if that can be arranged. Every week, there will be pre-recorded lecture videos (asynchronous) and a synchronous problem solving/discussion session on Zoom at the scheduled time slot. If the need arises, the course can be made fully asynchronous online.

Math 125: Numerical Analysis, Kilmer

I plan to teach the course synchronously, on-line, during the scheduled time block (M & W, 1:30-2:45 EST). The current plan is to record the lectures in real-time so they will be available for students who cannot attend.

The class requires programming in Matlab. I will be able run demos on the laptop and show results via share screen, while writing on slides with the other.

The course grades will be computed based on (near) weekly homework sets and mini projects (or take-home exams). These projects/take-homes will include an oral presentation (possibly including a demo on their computer, so it will require them sharing their screen and running the code on their computer) of their work, one-on-one with me (and possibly the TA), but these will be virtual.

There will be no in-class exams.

I hope to be able to come to campus 1 day a week and offer a couple of hour-long office hours on that one day. They would have to sign up for a slot.

In addition, I’ll hold a virtual office hour. If there are students attending remotely from extremely different time zones, I will set the time for that virtual office hour accordingly.

Ideally, the TA will also hold an office hour – I’m happy to work with the TA on what they are most comfortable with in terms of a virtual vs. in person office hour.

Math 135-01, -02, & -03: Real Analysis I, Boghosian, Nitecki, Quinto

This is a joint document, reflecting ongoing conversations between the three instructors for the course

(Boghosian, Nitecki, Quinto).

While in the best scenario in-person teaching is the preferred format for this heavily proof-based course, the concerns of the three instructors about their personal safety with respect to the virus (which differ) need to be respected.

Accordingly, we have tried to craft a format assuming totally online teaching. Our current plan is:

- Individually prerecorded lectures (including a main theorem or main idea of the next synchronous lecture) will be available asynchronously before class time.
- The instructors would take turns doing the videos, which would be available for all classes.
- Synchronous class time (as scheduled officially) devoted to further discussion, clarification, and explanation of the material in the prerecorded lectures (e.g., describing the general outline and going over subtle points in proofs, discussing counterexamples, applications, etc.).
- Quizzes which will be graded, but the grades not recorded; however, taking the quizzes will count toward the course grade.
- Homework to be graded by a TA.
- Office hours will be scheduled by the instructor and the TA for more individual attention.

Math 135-01: Real Analysis I, Nitecki

While I belong to the demographic regarded as especially susceptible to the virus, I feel personally confident that with reasonable precautions I would be able to teach these twice-per-week 75-minute classes in person. In fact, I would prefer to do so. Clearly, “reasonable precautions” presume an overall situation where a meeting of roughly 20 people would be regarded as safe, on epidemiological grounds, and the availability of a classroom which allows proper distancing.

Technical issues: Assuming that there will be students who are unable to attend in person, but can attend synchronously via zoom, I need the ability to mix live and zoom features of the class.

There is a model for doing a mixed Zoom/live class involving a computer and a notebook, and while I am not clear on just how that would work, would be willing to learn.

Math 135-02: Real Analysis I, Boghosian

First, I subscribe to the joint document that we prepared and submitted for MATH 135. I will participate in the joint asynchronous videos, and the proposed quizzes.

Assuming that I will be teaching online, I will write on my iPad¹ using Explain Everything, I will record the classes using Zoom, and I will make all this available to students on Canvas.

If, during the semester, it becomes the case that we can revert to teaching in person, I will continue to use my iPad in the classroom and to record lectures there for the benefit of students who choose not to attend, or who are isolating at home. For this, I will need a classroom with a computer projector.

Math 135-03: Real Analysis I, Quinto

Todd's teaching preference: If students will have been tested for COVID-19 on arrival at Tufts, I would plan to teach in person at the start and until it becomes unsafe. This would allow me to develop rapport with my students so that if we must go online, we will have built up a relationship.

If there are not rooms or it becomes dangerous to teach in-person, I would teach online, but I would like to have some meetings (e.g., help sessions) in person if it is safe.

Whether I am online or in person, I would write on my tablet and record the audio discussion and video using Zoom. I would bring the tablet and another computer to class (or use them in my study), one with video that would record the class and show me the remote students in gallery mode. I would write class notes and examples on my Microsoft Surface.

I would post corrected notes and the video-recorded lecture on Canvas after every class. I would use a Bluetooth headphone so that I could hear remote students as well as in-person students.

Math 136: Real Analysis II, Tu

- I plan to teach in-person, but with Zoom in front of me and a screen behind me so that in-person students can see the screen and remote students can log in online.
- No scheduling or time issues. Will use the already scheduled time blocks on SIS.

Math 145-01, Algebra I, Teixidor

Currently scheduled on Tuesday and Thursdays, 9-10.20. Class participation will be required. The class could be moved, if necessary, to the same days in the afternoon.

I am hoping to teach face to face. If necessary, I will have a zoom session so that remote students can participate on the live class. There may be some pre-recorded material but a substantial part of the discussion of proofs and examples will take place live.

Math 145-02: Algebra I, Lemke Oliver

I plan on teaching this entirely online. I will give live lectures on Zoom, hopefully with a healthy chat to encourage student participation, but lectures will also be recorded so students can participate asynchronously and review lectures at a later time. I intend to have an opt-in anonymous peer critique system for homework prior to submission for grading, since that should both work well with the online format, add another form of student engagement, and facilitate proof writing. I'll also be keeping it in sync with the other two sections, at least in terms of content covered and the textbook used. That way, whatever happens for Math 146 in the Spring, students from all sections will be prepared.

Math 145-03: Algebra I, Walsh

I want to teach fully synchronous and on-line. I would like to schedule a classroom once a week (during class time) for working together and class cohesion.

If possible, I would like to teach three 50-minute sessions a week. Ideally one of the classes would be on Friday and we could meet in a room that day.

I plan to teach the standard material (using Beachy and Blair), but have the method more participatory, and very proof-based.

Students will give short presentations occasionally by sharing their screen. The lectures will be recorded on zoom. Other material will be distributed as pdfs which the students should read and comment on.

Class participation (presenting briefly in class and participating in the working sessions) will be required in that it is a significant part of the grade. (25 %) However, if a student cannot meet in class or attend the live lectures, they can share pdf's of their proofs and proof ideas to the class for this part of their grade. These students need to contact me at the beginning of class, and if their situation changes, they need to notify me. In the event that it becomes unsafe to meet in class (could be determined by me or the university) the third class will move online, but stay as a working participatory session. We will probably move this third class back and forth (from on-line to in person) and I will take class input on this.

I will have a midterm and final on-line. These will be open book, and different students will have different questions. They will not be high stakes. (25 \% total)

Homework will be the most significant part of the course at 50 \%.

Math 165-01: Probability, Borgers

I would prefer my section to be one hundred percent online if that's acceptable to the university.

Each week will be based on 75 minutes' worth of lectures. I may either deliver these during live class (making a recording for those who can't be present) or post them as videos, haven't decided on that yet.

Class meetings (led by me) and office hours (by me and by the TA) on Zoom. Students will work on the (weekly, substantial) worksheets, in smaller groups, aided by me and/or the TA, and they will ask questions (anonymously, using the Whiteboard function). Grades based on homework 100%, no exams.

The class meetings will be at the times scheduled on SIS. We will schedule office hours to accommodate students in very different time zones.

Math 165-02: Probability, Hening

I plan to teach this online with synchronous lectures on Zoom. I can also teach in person if needed. Recordings will be posted to canvas. Office hours will be held on Zoom.

Grades will be based on weekly homework – there will not be exams.

Math 165-03: Probability, Murphy

Tentatively scheduled for one hundred percent online. Can change if needed.

Synchronous live lectures on Zoom, with recordings posted to canvas. Student participation is expected.

I will be on campus at least 3 hours per week to meet with students. Students will schedule times beforehand and I will need a space that can safely hold ~20 people. I will also offer 2 office hours per week via Zoom (and by appointment), one in the morning and one in the evening for international students.

Weekly homework and two open-note take home exams.

Math 185: Differential Geometry, Tu

- I plan to teach in-person during the regularly scheduled class time, but with Zoom in front of me and a screen behind me so that in-person students can see the screen and remote students can log in online.

Math 190: Topological Data Analysis, Weighill

I plan to teach fully online. It will be synchronous with lecture times as laid out in SIS. I am fine with the current times in SIS (10:30am-11:45am Tues-Thurs). In terms of tech, I plan to use a drawing pad in combination with my Mac.

Math 220: Top 10 Algorithms of the 20th Century, Adler

Since this is a graduate student course with small enrollment, I intend to teach this completely online but synchronously during the scheduled time slot. If this needs to change to accommodate the students other classes, though, I'd be happy to consider that.

The class will be conducted in a seminar style with a mix of lectures by myself, and presentations by the students. I plan to use zoom and use an iPad to share slides and write notes. The students presenting will be expected to do the same. Office hours will be held similarly.

Math 235: Analysis, Okoudjou

- I plan to teach in-person, but would like to be able to stream the lectures on Zoom for students attending remotely.
- I don't have any scheduling issues, however if teaching in-person is restricted, I hope I can teach in-person at least one day out of two (preferably Wednesday).

Math 240: Arithmetic Statistics, Lemke Oliver

Live lectures on Zoom (or whatever the streaming platform du jour is), hopefully an active chat, and posted recordings of lectures. Since it's a topics course, there would be fewer homework assignments, probably all optional. I'll pay attention to enrollment, and if there's a substantial presence of non-Ph.D. students, I'll find a way to increase the graded components of the course. I also plan on taking advantage of the online format to make the course available to people outside of Tufts. I believe the draw would be nontrivial.

Math 255: PDEs I, Boghosian

In this course, for which I will be the sole instructor, I plan to follow all of the points mentioned above for MATH 135, including those in the joint document, except for the periodic quizzes/ That is, I will use a mixture of asynchronous material (mostly for proofs) and live lectures at the scheduled times. I will record the live lectures and make everything available on Canvas. I will also follow the strategy mentioned above for MATH 135 in the event that in-person teaching becomes possible at some point during the semester.

Math 287: Lie Groups, Gonzalez

This is a graduate course which, at the moment, I plan to teach fully synchronously online at the time scheduled in SIS: MW 6:00 – 7:15 pm. Depending on the demands of Math 42 on my time, there is a small possibility that I may offer the class at a later time (such as MW 8:30 – 9:45 pm) or during one time slot, such as Mondays from 6:00 – 8:30 pm. I will be using software (such as the annotation app Drawboard PDF) which is available for free.