

Changes may be made to this document during the first week of classes.

Syllabus and course information

MAA 4212 — Advanced Calculus 2 Sections 16E9 (14752) and 3009 (14771), Spring 2021 MWF 7th period

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Syllabus (course content): Multivariable and single-variable calculus from a metric-space point of view. We will cover chapters 1–4 and 6–8 of the textbook, with a few omissions and additions. General topics will include:

- metric spaces and some of their topological properties;
- normed vector spaces as metric spaces; Heine-Borel theorem
- continuous functions from one metric space to another; continuity and compactness; continuity and connectedness

- uniform convergence of sequences of functions (from one metric space to another);
- multivariable power series; rigorous development of trigonometric functions;
- multivariable derivatives from an advanced viewpoint;
- inverse function theorem and implicit function theorem;
- Lebesgue integration.

Textbook: Terence Tao, *Analysis II*, 3rd edition (2014; corrected reprint 2017).

Tentative, approximate schedule of lectures. Click [here](#). You are expected to read the relevant material in the appropriate chapter-section of the textbook no later than the day after we cover that material in class. Preferably, do the reading earlier than that.

Goals of course:

- For the student to master the course-content.
- For the student to become accustomed to communicating mathematical ideas precisely and clearly, in written form.
- To prepare the student for what will be expected of him or her in a graduate program in mathematics.

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Communicating with Dr. Groisser outside class

- **Office Hours:** Tuesday 6th period (12:50-1:40), Wednesday 8th period (3:00-3:50) , and Friday 8th period (3:00-3:50). Check [my schedule](#) for updates.

All office hours will be held via Zoom. Students who can't make scheduled office hours may see me by appointment on most weekdays (but *never on a Thursday*). See also the statement about office hours in the [attendance policy](#).

- **Emailing me.** I receive a ton of email, so please be aware that:
 - **I don't answer email that lacks an *informative* subject line and the sender's full name.**
 - I won't answer math questions by email. An interactive conversation is needed. **Email is not a substitute for seeing me in office hours.**
 - I may not respond to email that asks questions that are answered in items you should have read (for example: this syllabus, the class home page, the homework rules and assignments page, solutions handouts, emails I've sent to the class, and announcements I've posted in Canvas), or that were answered in a recorded lecture whose video is posted, or that should be (or should have been) asked in office hours.
 - In general I answer students' emails **only on days that I normally have office hours, and only at certain times.** On office-hour days, I'll generally respond to emails that arrive before the halfway mark of my office hour. *Exception:* I generally don't wait till the next office hour to respond to emails inquiring about (possible) typos in a homework assignment, or informing me of some problem with one of my course webpages.
 - I don't provide individualized grade information by email.
 - I won't open attachments (or follow links) that look suspicious to me. I generally delete, without fully reading, any email that contains these.

My email address is located [here](#).

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Lecture modality

- On Mondays the lectures will be via Zoom only.
- On Wednesdays (except for March 24) and Fridays I will deliver "live" lectures in LIT 235.
- Wednesday March 24 has been designated a "spring recharge day", so there will be no lecture that day.
- All live lectures will be delivered simultaneously via Zoom.

Who may attend face-to-face or Zoom lectures?

- Zoom lectures may be attended by anyone registered in either section (face-to-face or online-only).
- **You are not allowed to attend a face-to-face lecture unless:**
 1. You are registered in the face-to-face section of this class, Section 16E9 (14752).
 2. One.UF *currently* shows that you are cleared to return to campus.
 3. You do not *currently* have symptoms of a contagious disease. (Allergies don't count. If you have allergies, then you probably know the difference between how you feel when you have allergy symptoms and you how feel when you're sick, or getting sick.)
 4. You put on an appropriate mask, covering your nose and mouth, before you enter the classroom, and keep it that way until after you leave the classroom (not counting brief removals/adjustments to take sips of water).
 5. You disinfect the desk/table area corresponding to your seat, before and after class. For this purpose, there are disinfectant wipes located near the door (assuming they do not run out).
 6. You respect the CDC's 6-foot physical-distancing guidelines. You may sit only at seats designated with a "You may sit here" (this may not be the exact wording) label. You are not allowed to physically approach me at any time (e.g. you may not come up to the front of the room to talk to me before or after class). You are not allowed to physically approach each other in the classroom either. You are not allowed to congregate outside the door either, before or after class.

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Graded components of course. There will be two midterm exams, a cumulative final exam, and graded homework. Each of the midterms will count towards 20% of your course grade. The final exam will count towards 30% of your course grade, and the homework will count towards the remaining 30%.

- **Exams.** Exams will be administered remotely, and may be proctored through Honorlock. They will probably be two hours long.

On every exam: unless I say otherwise, you are responsible for knowing any material I cover in class, any subject covered in homework, and all the material in the textbook sections we have studied. You are also responsible for most of MAS 4105 and the Calculus 1-2-3 sequence (MAC 2311-12-13 or the equivalent). However, you should not base any proofs in this class on theorems that were stated

but not proved in the lower-level calculus sequence (unless we have previously proved these theorems in MAA 4211–4212).

- **Midterm exams.** The *tentative* dates of the midterms are Tues., Feb. 16 and Tues., Mar. 23, at times TBA. *These dates are subject to change.* The actual dates will depend on our rate of progress and on finding days/times that don't conflict with students' schedules. I will give you at least a week's notice before any exam.
- **Final exam.** This will be a two-hour exam given Thurs. Apr. 29, starting at 10:00 a.m.
- **Homework:** There will be approximately six homework assignments. I'll be assigning many more problems than are physically possible for me to grade, so for each assignment I will collect only a (proper) subset of the exercises, which you will hand in on Canvas. To help motivate you to do all the assigned problems, I will not announce which ones I am collecting until shortly before they are due. You should start on each homework problem within a day of its appearance on the [homework page](#). **It is impossible to overstate the importance of doing *all* the homework.** *It is also exceedingly important that you pay attention to, and learn from, my comments on the handed-in homework once I return it to you.*

When I start posting problems for an assignment, you'll often see wording like "Assignment X (not yet complete)"; I remove the "(not yet complete)" once all the problems are posted. I wait until we've covered certain material to post certain problems, so that you don't waste time trying to do problems you don't yet have the tools for.

- **Student Honor Code.** UF students are bound by The Honor Pledge, which states:
We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

In my class, the penalty for cheating is a failing grade (E) for the course. Several students last semester learned this the hard way, and will not be graduating this spring or with the B.S. degree they wanted. I do not give cheaters second chances.

The Honor Code (which can be found [here](#)) specifies a number of behaviors that are in violation of this code. Furthermore, students are obligated to report to appropriate personnel any condition that facilitates academic misconduct. If you have any questions or concerns about student conduct, please consult your instructor.

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Importance of following rules and instructions

The [homework page](#) has various important rules, including what's become a long list of rules about the format of submitted work. There has always been one simple principle behind all those rules: *Don't make your work harder than necessary for me to read or to comment on.* Said another way: *Have respect for my time, and use common sense.* Unfortunately, what I mean by this has proven not to be obvious to students, leading to an ever-growing list of explicit "do"s and "don't"s. Last semester, this first in which I received all submitted homework and exams electronically, I found that I needed to expand the list quite a bit. The rules involving margins, scan quality, and other properties of work you submit, apply to exams as well.

I made a couple of other unfortunate discoveries last semester:

1. In a semester in with electronic submission of work, or teaching-modalities that are new to me, or serious, ever-changing threats to the health of so many people—let alone a semester that has all three features—I cannot get my grading and class-prep done unless I enforce my rules **rigidly**; and
2. In any class, a significant number of students will not take a rule seriously unless there is a penalty for not observing it.

So, this semester there will be no grace-period during which I do not enforce my rules. Do not pick and choose which of my rules to follow. Non-observance of any of these rules will earn penalties that could lower your grade.

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My grading system for this course, this semester

1. After each homework or exam, I decide grade cutoffs for that item according to the philosophy "A = excellent, B = good, C = satisfactory, D = unsatisfactory but passing". In setting these cutoffs, *I do not have a predetermined grade curve or predetermined percentages for letter grades.*
2. At the end of the semester, I compute a numerical "raw score" for each student, on a 1000 point scale, using the weighting scheme [stated earlier](#): 20% (200 points) for each midterm, 30% (300 points) for the final exam, 30% (300 points) for the homework.

On the exams themselves, you'll see point-totals different from the ones above. These are rescaled appropriately in the raw-score computation. For example, if point-values for the problems on the first midterm add up to 138, your exam score will be multiplied by 200/138 in the above computation.

Similarly, the homework assignments will not all be the same length and will not all count equally; they will count proportionally to the number of points in each assignment. For example, if the point-values of the homework assignments add up to 249, then your homework-point total will be multiplied by 300/249 in the raw-score computation.

3. By applying the same weighting scheme to the cutoffs for exams and homework, I construct raw-score grade cutoffs for each of the grades A, B, C, D. The cutoffs I use for A- and B+ are the trisection points of the interval from the B cutoff to the A cutoff; the cutoffs for the B-, C+, C-, and D+ grades are computed analogously.

The grades that UF currently allows instructors to assign are A, A-, B+, B, B-, C+, C, C-, D+, D, D-, and E. (**For grade-point equivalencies of these grades, see [this catalog page](#).**) All of these are grades are possible in this class, except the D-.

In my philosophy (and that of my own college professors) of what a minus-grade means, a B-, for example, is *not* the lower end of the B range; it is *somewhat below* the bottom of the B range, and means that your work falls a little short of "good". (Said another way: another professor whose regards your work as "a little short of 'good' ", but who regards B- as meaning "the low end of the 'good' range", would *not* assign you a B- ; he/she would assign you a C+.) This philosophy is consistent with the degree-requirements for most majors at UF: courses count towards your major only if you get a "flat" C or higher, because a C- means that your performance was *less than* satisfactory—not that it was *barely* satisfactory—and therefore that you did not satisfactorily complete the course. This philosophy is also consistent with UF's [S-U grade option](#).

For similar reasons, I have never given the D- grade. "D" means "unsatisfactory but passing". My D cutoff is the rock bottom of what I consider to be the "passing" range, so anything below that is a failing grade, which at UF is the E grade. (*Note*: Because a C is usually needed for a course to count towards

requirements for majors, minors, etc., an unfortunate number of faculty, advisors, and students have come to refer to every grade less than C as "failing". This is not the correct meaning of "failing grade", nor has it ever been; again see [this catalog page](#).)

Since I don't determine the exam-grade cutoffs ahead of time, I can't tell you in advance exactly how many points you'll need to get a particular grade for the course. For examples of past grade-scales in my Advanced Calculus classes, navigate from my [past classes](#) page. However, **there is no guarantee that this semester's grade cutoffs will be close to those of the past classes**. This semester's MAA 4212 will be unlike any MAA 4212 class that I've ever taught. The differences necessitate some changes to the grading-scheme I've used in the past.

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Recordings of lectures. Most lectures (MWF 7th period, 1:55-2:45) will be recorded, technology permitting. (As of last week, there were continuing problems in Little Hall.) For those lectures that are recorded, links to the recordings will be posted in Canvas (usually by 11:59 p.m. the same day). Students who participate with a camera engaged, or who utilize a profile image, are agreeing to have their video or image recorded. If you do not want to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Similarly, students who un-mute their microphones during class are agreeing to have their voices and all background sounds recorded. If you are not willing to consent to have your voice and background sounds recorded during class, you will need to keep your mute-button activated and communicate exclusively using Zoom's "chat" feature, which allows students to type questions and comments live.

As in all UF courses, **unauthorized recording and unauthorized sharing of recorded materials is prohibited**. This means that you are not allowed to make your own recording of a lecture, or share the official recording with anyone outside the class.

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Attendance policy. If you miss a lecture, you are required to view the recording before the next class (barring reasons such as illness, weddings, funerals, family emergencies, and religious holidays of which I am informed in advance). **In office hours, you may not ask me questions about a lecture you missed until you have viewed the recording.**

What if you miss an exam? If you miss an exam for a valid reason, and supply me with satisfactory documentation *promptly*, I will work out with you some way that is as fair as is feasible for you to make up the missing grade-component. Except in very large classes (which I don't teach) with cookie-cutter exams (which I don't give), there is no such thing as a fair make-up exam. Thus, the way I have you make up the missing grade-component may or may not be via an exam. If you miss an exam for a reason that I do not consider valid (consistent with UF policy on which absences should be excused), or do not supply me with satisfactory documentation within two days, you should expect to receive a zero for that exam. If extenuating circumstances cause a reasonable delay in your providing me with satisfactory documentation, I may treat your exam-absence as valid and documented. (However, I will be the sole judge of what is "satisfactory", "extenuating", and "reasonable".)

If you are too ill to take an exam, please notify me by email before the exam starts (if possible).

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Accommodations for students with disabilities. Students with disabilities who wish to request

accommodation must first register with the [Disability Resource Center](#). It is always important that you share your accommodation letter with your instructor, and discuss your accommodations, as early as possible in the semester. **Because this semester is so unusual, I will need to know far in advance of the first exam whether there are students who will be requesting accommodations. Please let me know by Wed. Jan. 20 if you *plan* to request accommodations, whether or not you have received your letter from the DRC yet.**

Teaching-evaluations. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals or via ufl.bluera.com/ufl/. Summaries of course-evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/.

UF Health and Wellness Resources:

- **U Matter, We Care initiative.** If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu/ to refer or report a concern, and a team member will reach out to the distressed student.
- **Contact information for the Counseling and Wellness Center.** Visit counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.
- **Student Health Care Center.** Call 352-392-1161 for 24/7 information to help you find the care you need, or visit shcc.ufl.edu/.
- **University Police Department.** Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center.** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; ufhealth.org/emergency-room-trauma-center.