Course Staff
Dr. George J. Schaefer — Lecturer
- Office: 381-G
- Office Hours: 3:00–3:30 PM on Mondays, 3:00–4:30 on Wednesdays*
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* If you walk past my office and I am holding office hours that are not listed here it is because I also teach Math 51. Please refrain from attending my office hours outside those listed here.

** Please observe the guidelines in Online Interactions when emailing us.

Course Website
The course website is math20.stanford.edu. All course materials will be available on the course website or linked from it. We will not be using Canvas this quarter.

Enrollment
Please speak with the Math Department’s excellent student services staff (in 381-S) if you have problems with enrollment in the course. Such issues fall typically under the purview of the registrar/university administration and are largely out of the course staff’s control.

Online Interactions
If you have questions about the course, the course staff is here to help! However, we ask that you follow these guidelines to make these online interactions more productive:

- Please only email me (Dr. Schaeffer) regarding administrative concerns (e.g. OAE accommodations, exam conflicts, emergencies requiring an extended absence, personal issues with the course, etc.). Again, most enrollment issues are outside my direct control.
- If you have a question about the course material (e.g., a question on a homework problem), post it to the Math 20 Piazza page (linked from the course website)! There are several reasons this is preferable to asking and answering questions via email:
  - Because everyone in the course can see the question and the answer(s), it only needs to be answered once!
  - In addition to the course staff, other students can answer your questions or add follow-ups.
  - I may also post hints or clarifications regarding homework problems on Piazza.
  - Questions posted after 5 PM may not receive a reply from course staff until the morning of the next weekday. You are of course free to answer other students' questions at any time!
- Your scores on homework assignments and exams will be recorded using Gradescope (more on this below). If a score has not been posted to Gradescope, it is probably because that assignment has not yet been graded. Instead of email, use this webform to report any grading errors (see also Redress of Grades).
- You are perfectly capable of calculating your own (actual or potential) numerical grade based on the information in this document (see Determination of Numerical Grades) and your scores on homework and exams as recorded on Gradescope. Please refrain from asking course staff to perform this calculation for you.

Textbook

Calculators
With very few exceptions, you will not need to use a calculator during this course. The use of any electronic device (including cellphones and calculators) during an exam is prohibited.

Syllabus
Math 20 covers the intermediate topics in a standard two-semester/three-quarter college-level single-variable calculus course, with some additional material on differential equations, modeling, and parametric curves.
- The course will be broken up into three sections:
  - Section 1 (Weeks 1–4): Concepts and interpretation of definite and indefinite integrals, methods of integration (substitution, parts, and the use of an integral table)
  - Section 2 (Weeks 5–8): Applications of integration (differential equations and volumes)
  - Section 3 (Weeks 9–10): Parametric curves and arclength integrals
Midterm 1 will cover Section 1, Midterm 2 will cover Section 2, and the Final will cover all three sections. A more detailed course calendar will be posted to the course website.

Prerequisites
You are expected to be familiar with the material that precedes Math 20 in a standard precalculus/calculus sequence. More specifically, you should be conversant in the following:
- Precalculus (algebra, functions, graphing, trigonometry, logarithms, etc.)
- Limits and continuity (limits, continuous functions, intermediate value theorem)
- Differential calculus (differentiable functions, first and second derivative tests, finding minima and maxima, mean value theorem)

You will not be tested directly on the above material, but much of Math 20 will depend on it. Mastery of differentiation and derivative rules is particularly important for success in Math 20.

Course Organization and Materials
In a typical week you will attend three lectures (led by myself), complete one online reading quiz, and one homework assignment. The course staff will also hold regular office hours during the week.

There are no lectures or office hours on Memorial Day (May 29th, the Monday of Week 10). Regular office hours on exam days are canceled, though additional review sessions may be held by course assistants leading up to the exams.

If for some reason you cannot make it to class it is your responsibility to find out from a classmate (or the course website) what material you missed.

Because of time constraints it is unlikely that we will be able to cover every nuance of the material in the Greatest Possible Detail during lectures, which is why I will occasionally assign required readings in the textbook or that I have written up for you myself. Such readings will be accompanied by short quizzes which you will take online. Your completion of such readings is fundamental both to your understanding and my effectiveness as a lecturer.

You are responsible for all material covered in lecture and discussion, all assigned readings and handouts, and any supplemental material presented in homework assignments.

Homework Assignments
There will be eight homework assignments, due approximately one week from when they are assigned.

- Homework will be collected at the beginning of class on the due date.
- Homework in this course will be graded not only on completion and correctness, but also on how well you communicate what you are doing. Show your work when possible and use words to describe your process and your reasoning. Good work in mathematics is not just a series of equations, but a coherent and logical progression of ideas leading from the problem to a solution.
- Homework assignments will typically consist of both book problems and supplemental problems (that I write myself). The supplemental problems are not optional and must be completed for full credit.
- It is a good idea to start the homework early, or at least look over the problems (especially the supplemental problems) as soon as they are assigned.
- Collaboration is encouraged as long as it is beneficial to your understanding of the material. Copying someone else’s homework is a violation of the Stanford Honor Code; your solutions must be your own.
- If you have questions about a homework problem, post it to Piazza! You can also answer questions other students have posted.
- Solutions to each homework assignment will be posted to the course website shortly after it is due.
- Your graded work will be returned to you as soon as possible, and a summary of your homework grades will be made available via the course's Gradescope site.
- Your lowest score on the eight homework assignments will be dropped. This is to accommodate any emergencies that prevent you from submitting your work on time.

Reading Quizzes
Approximately once per week there will be a short, online reading quiz to make sure you understand the course material we are currently covering (and survey any problems you might be having with the course).

You will receive full credit for any "good faith" response to the questions. Some fraction of your reading quiz scores (TBD) will be dropped.

Examinations
There will be two midterm exams and a final exam. The first midterm exam will cover material from Section 1 of the course (see above); the second midterm exam will cover material from Section 2. The final exam will be cumulative, and will cover all three sections.

The dates of the midterms and exams are as follows:

- MIDTERM 1: FRIDAY, APRIL 28TH, 1:30–2:20 PM (in class, location TBA)
- MIDTERM 2: WEDNESDAY, MAY 24TH, 1:30–2:20 PM (in class, location TBA)
- FINAL: FRIDAY, JUNE 9TH, 7:00–10:00 PM

Makeup midterms will be given rarely (with exceptions for students that have planned religious observances). However, if you have an unplanned appropriate, documented, and verifiable excuse that compels your absence from an examination (such as a family or medical emergency), contact me as soon as possible and we can discuss our options.

It is department policy that exams in lower-division courses such as Math 21 must be taken at the scheduled time. Students with OAE accommodations or who are away from campus for University-sponsored events may have different arrangements (made in advance in conference with Dr. Schaeffer), but must take the exam on the same day as everyone else.

It is department policy that student-athletes who are away from campus during an examination must have the examination administered individually by athletic staff on the examination date. Please get me in contact with the appropriate staff member at least one week in advance of an exam so that the appropriate arrangements can be made.

Students with accommodations from OAE must make arrangements with me by email for each examination with an attached copy of your letter at least one week prior to the exam. Please note that arranging for extra exam rooms can take up to a week.
Late and Make-up Work Policies
The general rule is that late homework is not accepted and make-up exams are not given. The only guaranteed exceptions are reserved for students with planned religious observances who inform me in advance. Please notify me by email as soon as possible if there is an emergency that will interfere with your work in this class.

Grading and Feedback
We will be using a service called Gradescope to report your homework/reading quiz grades and to grade your exams.

Redress of Grades
If you believe there is an error in the grading or the recording of your grades on one of your homework assignments or exams, fill out this form. For homework and midterms, we must be notified via this form of grading issues within three days of the relevant score being published on Gradescope. For the Final Exam, you will be notified one day before the deadline for redress.

Determination of Numerical Grades
Your Numerical grade is apportioned as follows:
- Homework: 17.5%
- Reading Quizzes: 2.5%
- Exams: 80%

Homework. There will be eight homework assignments over the course of the quarter; your lowest of these eight homework grades is dropped. The remaining seven homework assignments count for 2.5% of your Numerical Grade each.

Reading quizzes. There will be a number (TBD) of reading quizzes over the course of the quarter. These are graded on “good faith” effort, and some number of your lowest reading quiz scores (TBD) are dropped.

Exams. As mentioned above, the course is broken up into three sections. Your Exams grade is determined by how well you answer questions in these three sections.
- Your Section 1 grade (35% of your Numerical Grade) depends on your Midterm 1 grade and your grade on Part 1 of the Final exam.
- Your Section 2 grade (35% of your Numerical Grade) depends on your Midterm 2 grade and your grade on Part 2 of the Final exam.
- Your Section 3 grade (10% of your Numerical Grade) depends only on your grade on Part 3 of the Final exam.

For Sections 1 and 2, your Midterm and Final Exam grades are weighted as follows
- If you do better on Part X of the Final than on Midterm X, then your Section X score is [25% your Midterm X score] + [75% your Final, Part X score]
- If you do better on Midterm X than on Part X of the Final, then your Section X score is [60% your Midterm X score] + [40% your Final, Part X score]
The grading scheme for Sections 1 and 2 is designed to work in your favor! If you flub one of the midterms, you can make it up on the final to some extent; conversely, if you do really well on the midterm, it can mitigate a lower score on the final.

**Determination of Letter Grades**

Once your numerical grade is computed, it is rounded to the nearest hundredth (two decimal places) and your letter grade is assigned according to the following standard grading scale:

- A (93.00–100.00%)
- A– (90.00–92.99%)
- B+ (87.00–89.99%)
- B (83.00–86.99%)
- B– (80.00–82.99%)
- C+ (77.00–79.99%)
- C (73.00–76.99%)
- C– (70.00–72.99%)
- D+ (67.00–69.99%)
- D (63.00–66.99%)
- D– (60.00–62.99%)
- F (below 60.00%)

I am generally against "curving" grades because I believe your grade should reflect your individual performance in the course. That being said, the above letter grade boundaries *may* be modified if the average class grade lies outside of what I consider to be a reasonable range.

The grade of A+ is given rarely in introductory math courses.

For those taking the course for CR/NC (credit / no credit) rather than a letter grade, the University defines "credit" as a grade of C– ("satisfactory") or above and "no credit" as a grade of D+ or below.

I will grant a grade of I ("incomplete") only if you (a.) request it by the last day of class and (b.) your current numerical grade in the course falls within the "satisfactory" range (C– or above).

**Policies Relevant to Student-Athletes**

Students who are active members of a in a Stanford University Athletics team should identify themselves to the course staff using this webform.

- If you will be traveling for competition in athletic event on a day when homework is due, the expectation is that you can scan or photograph your assignment and email it to me or a CA by the 1:30 PM deadline.
- It is department policy that student-athletes who are away from campus during an examination must have the examination administered *individually* by athletic staff on the examination date. Please get me in contact with the appropriate staff member as soon as possible (at least one week before the exam) so arrangements can be made.
Policies Relevant to Students with OAE Accommodations
If you have an accommodation with the OAE (Office of Accessible Education) please notify me by email as soon as possible. I must be notified of your accommodations at least one week before an exam so that the necessary arrangements can be made. Additionally, I will require a copy of your OAE letter (sent by email is fine).

Extra Help
If you need extra help beyond the scope of class and our office hours:

- Free tutoring is available through the office of the Vice Provost for Teaching and Learning (VPTL). There are individual appointments (see sututor.stanford.edu) and drop-in appointments (see tutoring.stanford.edu) available for Math 21.
- It is my understanding that Stanford athletes have access to additional academic support. Ask your team’s staff for details.
- The Math department has hired a tutor who exclusively runs drop-in sessions for the Math 19/20/21 sequence. Details TBA.