

MATH 118 SYLLABUS, FALL 2020

FUNDAMENTAL PRINCIPLES OF CALCULUS

Disclaimer: The present syllabus does not constitute a contract. The Instructor reserves the right to make changes at his discretion throughout the semester.

General information:

- **Instructor:** Dr. Guillaume Dreyer
Office: KAP 258
Email: gdreyer@usc.edu
Lectures: MWF 10:00–10:50 am PST (ONLINE).
Office hours: TBA
- **Teaching Assistant:** Zimu Zhu
Office: KAP 248B
Email: zimuzhu@usc.edu
Discussions: TTh 2:00–2:50 pm and 3:00–3:50 pm PST (ONLINE)
Office hours: TBA
- **Textbook:** Hughes-Hallet, *Applied Calculus*, ISBN: 9781119752691 (Full title: Applied Calculus w/ WPNGCC 1-sem f/USC)
- **Prerequisite:** MATH 108 or MATH 117 or placement exam.

Grading breakdown: Homework 8%; Quizzes 15%; 2 Midterms, 21% each; Final 35%.

Course content: limit, continuity, derivative and applications, extrema, antiderivative, definite integral, fundamental theorem of calculus, exponential and logarithmic functions, extrema and definite integrals for functions of several variables.

Learning objectives: For the most part, the course will focus on introducing the basics of differential calculus as well as its applications to business and social sciences. In particular, we will learn how to formalize concrete questions into mathematical problems and rigorously apply mathematical methods to solve them.

Lectures and discussions: All lectures and discussions will be offered live on Zoom at the scheduled time, PST. They will also be recorded and made available as soon as possible. However, bear in mind that uploading a lecture video can take several hours, especially when there's a lot of traffic.

Blackboard: Weekly homework assignments and grades will be posted on **Blackboard** <http://blackboard.usc.edu>. It is everyone's responsibility to visit the website on a regular basis.

Homework: Registration: go to <https://www.wileyplus.com/>, the course ID is TBA. Assignments are posted every Monday and are due Monday of the following week **by 11:59 pm, PST**. You are allowed to drop one HW score. Late assignments will not be accepted, no exceptions.

You are strongly encouraged to write down your own, complete, neat solution of each HW exercise in a notebook. During any test/examination, you will be evaluated based on your ability to carefully explain, justify and organize your solution. Ambiguity, lack of clarity, mastery of the terminology and concepts, disorganized work, etc, will significantly impact your grade. As a result, you want to work and train accordingly in order to meet these evaluation standards.

Quizzes: There will be a weekly 20 min quiz during Tuesday's discussion every week of the semester but midterm weeks. **No make-ups under no circumstances. You must take each quiz at the scheduled discussion time, PST.** The lowest quiz score will be automatically dropped at the end of the semester. At the end of each quiz, you will be given 3 minutes to neatly scan your work (pdf file), then upload and page-label your submission on Gradescope. **During each quiz, with no exceptions, everyone will be required to log onto Zoom with their camera ON filming their activity during the entire duration of the examination, including the submission part.**

Exams: There will be two midterms and a final. **You must take each examination at the scheduled time, PST.**

- **Midterm 1:** Wednesday, September 23rd, in class.
- **Midterm 2:** Wednesday, October 28th, in class.
- **Final:** Wednesday, November 18th, 2:00 pm – 4:00 pm PST.

At the end of each quiz, you will be given 5 minutes to neatly scan your work (pdf file), then upload and page-label your submission on Gradescope. During each examination, with no exceptions, everyone will be required to log onto Zoom with their camera ON filming their activity during the entire duration of the examination, including the submission part. Exams are open book. It is however absolutely forbidden to communicate with anyone.

If there is a scheduling conflict for an exam, **you must let ME know (NOT the TA) at least 2 weeks before the examination.** A scheduling conflict must involve an activity sponsored and approved by USC (marching band, athlete event, etc.). In particular, the university club or organization in question must send an official request, with the Dean's approval, to all faculty. Personal activities do not qualify. **FAILURE TO ATTEND AN EXAMINATION WILL NOT BE EXCUSED UNDER ANY CIRCUMSTANCES.**

Gradescope: At the end of each test – quiz or exam – you will be given a few minutes to neatly scan your work (pdf file), then upload and page-label your submission into Gradescope. There are plenty of scanning apps to choose from (I use Tiny Scanner for instance, but there are lots of options out there). With that said, no improvisation here: everyone is expected to get very familiar with their app of choice so that the scanning and submission part can be completed within the time-windows mentioned in previous paragraphs (illegible submissions will be not accepted with the obvious consequences). Once your scan is ready, you will upload it onto a platform called Gradescope where you will ask to complete a page-labelling step before submitting your work.

I am your point of reference: Above all, what is covered during lectures – topics, examples/exercises and methods to solve them – are your points of reference. Failure to attend lectures will greatly impact your performance in this course.

Resources: The Math Center (ONLINE) is open weekdays from 8 am to 7 pm (it closes earlier at 5 pm on Fridays). For up-to-date information on the consulting hours, visit the Math Center homepage <http://dornsife.usc.edu/mathcenter>. The purpose of the Math Center is to provide an environment where students can stop by to get help on their math classes. Math TAs at USC hold their office hours there. It is probably better to attend office hours of TAs who are teaching Math 118 this term. However, you are welcome to stop by the Math Center at any time and seek for help from any of the Instructors or TAs who are present at that time.

Students with disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester and a letter of verification detailing approved accommodations must be delivered to your Instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30–5:00 pm, Monday through Friday. The phone number for the DSP office is (213) 740-0776.

Course standards and good practice:

Work habits:

- Preparing for lectures: I usually announce at the end of each lecture what will be covered next. Taking 10 min before lecture to skim and get familiar with the content of a section – topics, definitions, theorems – is highly beneficial.
- Daily training: You must work every day, ideally 60 min in average. Daily training is the only way to properly learn and memorize the material, develop your mathematical skills and style. Exams and quizzes are fast-paced and require adequate preparation. Train yourself to complete as much work as possible within a given time-frame. Also, bear in mind that college-level calculus courses are demanding and move on very quickly. It is easy to fall behind and surprisingly difficult to catch up. Only daily practice can prevent this.

- Evaluation standards: Exams, quizzes, and homework assignments are all partial credits. The quality of your answers is a main component of the evaluation process. Your answers must be neat, organized, unambiguous. You must show mastery of mathematical terminology and notations – e.g. equations neatly organized; knowing definitions, theorems and conditions under which results apply. Keep in mind that it is in no way the job of the person evaluating your work to guess and piece together chaotic or illegible arguments. Developing a top-notch “style” comes with (a lot of) practice. It is also by following such standards you’ll achieve mastery of the material. Indeed, writing neat complete but concise solutions forces you to organize your thoughts and identify the key arguments that must be part of your solution. It is by pushing yourself to delivering a work of high quality that will make real progress, in mathematics as in other areas.

Course policies:

- Course attendance: I do not enforce attendance. However, based on past experiences, all students who decide not to attend lectures and discussions regularly end up performing (extremely) poorly, which typically results in either dropping the class, barely passing, very often failing the course. Be aware that key examples and methods are discussed during lectures, and some are not covered in the book. You may be asked to solve an exercise following a specific method discussed in class.
- Accountability: Rules are clearly stated in the syllabus and are strictly enforced. By enrolling in this course, you pledge to abide by them. You determine what the learning experience will be through the work and commitment standards you set for yourself. You take full ownership for the quality of the work you deliver.

It hurts but it’s inspiring:

Being part of a highly selective institution such as USC, we assume knowledge of concepts and methods covered in course prerequisites. In theory, you all have the same mathematical background. Reality however shall prove otherwise. While the majority of you may have achieved high grades in the past, those grades do not necessarily reflect actual mastery. It will be quickly apparent that some of you have set higher standards in the way they’ve been learning mathematics (and other topics), training and timing themselves on a regular basis, dissecting arguments, pushing themselves to write clear and articulate solutions. Others may have not imposed such standards on themselves while still getting by (grade inflation in high-school can be very deceptive).

So here is likely the first major challenge you’ll face in college. Within days, you’ll come to the realization that you’re surrounded by high-achieving fellows, among them some who are extremely competitive and capable.

- First step is to humbly acknowledge this reality.

- Second step is to acknowledge these high-achieving students' qualities. Such persons are very good for very good reasons: they constantly and for a long time have been holding themselves to high learning standards; they've worked harder; they're attentive, and attentive to details; better organized; articulate; they deliver work of high quality.
- Third step is your own introspection. While there are things we're good at, there are plenty of skills we overlook, often very conveniently, and thus fail to develop. It takes years to correct some of our bad work habits. What matters is not where you as an individual start, it is how dedicated you are at shaping your intelligence and skills, especially the ones you're not good at. Improvement comes with one and only thing: hard work and perseverance.

Something to cheer you up: we've all been there.