Math UN1207: Honors Math A

Tuesdays/Thursdays, 1:10 - 2:25, online

Instructor: Evan Warner

Office hours: Mondays 10:00 - 12:00, Fridays 3:00 - 5:00, or by appointment. My office hours as well as those of the TAs will be conducted on Zoom and can be accessed via Courseworks.

Email: `warner@math.columbia.edu`

Webpage: `www.math.columbia.edu/~warner/honorsmathA`

TAs: Nguyen Dung and Jeffrey Huang; see `http://www.math.columbia.edu/general-information/help-rooms/` for help room hours

Course description: This is a rigorous, accelerated introductory course in calculus and linear algebra. The course material will be theoretical rather than applied, and it is expected that students will develop facility in reading, understanding, devising, and writing proofs. After a brief introduction to mathematical arguments, we will discuss single-variable calculus from an abstract perspective, followed by an introduction to linear algebra with a view towards calculus in several variables.
You should expect to work considerably harder in this class than in a normal calculus class; this is reflected in the fact that each semester of Honors Math counts for 4 credits instead of 3, and students who complete the courses need not take Linear Algebra (Mathematics V2010). As a prerequisite, students should have a score of 5 on the Calculus BC Advanced Placement exam, or a score of 7 on the IB HL Mathematics or Further Mathematics exams, or an A on the U.K. A-Level Further Mathematics exam, or the instructor's permission.

Class sessions: All classes will be conducted on Zoom and can be accessed via Courseworks. Class sessions are saved and I understand that some students may have time zone issues, so attendance at the scheduled time is *not* required. However if you can reasonably attend, you should – it affords the opportunity to ask questions during the flow of lecture, and I will also occasionally use the quiz feature on Zoom for feedback purposes (not graded). If you opt to watch the lectures later, be careful not to fall behind; it is best to schedule your own time in advance so that you can watch the lectures within a day or so of the class time.
Students in attendance at the scheduled time do not have to turn their videos on during lectures, although you are welcome to if you like; presumably there is some social benefit. I will try to be proactive and explicitly solicit questions often, but also please feel free to interrupt if you are confused about something, or use the chat function for that purpose. Questions during lecture are usually helpful not only to the questioner, but also to the rest of the class.

Textbook: Tom M. Apostol, *Calculus*, 2nd edition, Volume I (Wiley). Reading and written assignments will be drawn from this text. We will expect to cover chapters 1-5 and parts of chapters 6-7 and 10-11. Volume II will not be used this semester.

Homework: Homework will be assigned weekly and will be due at 1:00 p.m. each Tuesday,

starting the second week. Assignments will be posted on the course webpage and are to be submitted electronically on Courseworks. You may type or handwrite your solutions; handwritten solutions may be scanned or photographed but should be legible and contained in one file. Please check to make sure that your file has uploaded correctly; if there are problems you may email the file to me directly.
No late homework will be accepted without prior approval; however, to take care of the occasional lapse *the lowest homework score for each person will not count towards their final grade.* I recommend you not use this "free pass" too early in the semester! You should attempt every homework problem and are responsible for understanding how to solve them for the purpose of exams. Collaboration and discussion with your classmates is encouraged, but each assignment must be written individually, in your own words. In particular, do not exchange any written work with others and do not use any sources for a given problem that trivialize that problem.
In addition to the problems that you are to hand in, there will be some supplementary problems. You are expected to try these and (eventually) understand how to solve them as well, but they will not be graded. They might make good exam practice problems. Finally, each assignment will also include some reading from the textbook (up to 40 to 50 pages, perhaps more on occasion). Much of this will duplicate what is in the lectures, but not all, and you are responsible for understanding the content of both.

Exams: There will be one midterm and one final exam, both administered on Courseworks. The midterm exam will be timed, but it can be completed at any time in the 24 hours following class on Tuesday, October 27. The final exam will be untimed and will be assigned Tuesday, December 15 and due approximately a week later. Course materials, including the textbook, notes, lectures, and practice problems, may be consulted for both exams. Collaboration or outside sources will not be permitted. Makeup exams will be given only under exceptional circumstances and you will need a note from a doctor or dean.

Grades: Grades will be based 40% on homework, 20% on the midterm, and 40% on the final. Raw scores do not have any *a priori* meaning and grade ranges will be determined during grading.

Disability accommodations: If you have an exam accommodation through Disability Services, please let me know at least two weeks in advance so that the (virtual) paperwork can be completed with enough time in advance to make the necessary arrangements.

Academic dishonesty: Anyone found to have cheated on an exam will receive a failing grade for the course and be subject to administrative discipline. Cheating on assignments (e.g., copying written work from somebody else) will also normally trigger administrative disciplinary procedures. Fortunately, the vast majority of students do not cheat in classes like this. Please come to me (or use another resource) if you are struggling with the material instead of resorting to cheating.