Single Variable Calculus 2 (Math 102), Fall 2018

Instructor: Daniel Hast (`drh@rice.edu`)
Classroom and course times: Herzstein Hall 210, MWF 11:00–11:50am
Office hours: Herman Brown Hall 426, Monday 3–4pm, Tuesday 3–4pm, and Wednesday 2–3pm.
Textbook: *Calculus: Volume 2* by OpenStax
(`https://openstax.org/details/calculus-volume-2`)

Course topics

If you're in this course, you've already learned what derivatives and integrals are, and you've seen the fundamental theorem of calculus, which explains how antiderivatives can be used to compute integrals. But how do we find an antiderivative in practice? In this course, you'll learn some practical techniques for finding antiderivatives and computing integrals, as well as several important applications of integration.

We'll also investigate infinite sequences and series, which are a discrete analog of integration. You'll learn about Taylor series—an essential tool for analyzing and approximating functions—and how calculators use them to compute transcendental functions.

Finally, we'll explore some further topics and applications to geometry, such as parametric equations, arc length of curves, polar coordinates, how to decompose a sound wave (or other periodic signal) as a sum of pure tones, and a remarkable formula that connects trigonometric and exponential functions using complex numbers.

Expectations

In my experience as a student, most people do not follow all the details of a math lecture in real time. During lecture, you should expect to witness the big picture of what's going on. You should pay attention to the lecturer's advice on what is important and what isn't. A lecturer spends a long time thinking about how to deliver a presentation of a large amount of material; they do not expect you to follow every step, but they do expect you to go home and fill in the gaps in your understanding. Not attending lecture really hurts your chances at a deep understanding of the material.

It is your responsibility to keep informed of any announcements, syllabus adjustments, or policy changes made during scheduled classes. Make sure to check Canvas (`http://www.rice.edu/canvas`) as announcements may be posted there.

Exams

There will be two midterms and a final exam. The first midterm will be 7–9pm on **Tuesday, September 25**, and the second midterm will be 7–9pm on **Thursday, November 8**. If you have a conflict with these dates, let me know within the first week of class.

The date for the final exam is set by the Registrar's office and is not available at this time. It is the policy of the Mathematics Department that no final may be given early to accommodate student travel plans. If you make travel plans that later turn out to conflict with the scheduled exam, then it is your responsibility to either reschedule your travel plans or take a zero in the final.

Books, notes, and calculators will not be allowed on exams. Make-up exams will be allowed only in the case of a documented medical emergency.

Grading

Your course grade will be based 80% on the exams, distributed among Midterm 1/Midterm 2/Final as 23/23/34, 11/23/46, or 23/11/46, whichever benefits you the most. The homework will count for 20% of your grade: 10% for the written homework and 10% for the Webwork problem sets.

When computing final course grades, a student's exam scores are normalized against scores of all students in Math 102 this semester, not just those in this section.

Homework

There will be two types of homework. The first type is done online through the Webwork system; students log in at:

http://webwork.math.rice.edu/webwork2/Math102Fall18Hast/

Use your Rice NetID (without the `@rice.edu`) as your login, and your Student ID (S followed by 8 digits) as your initial password (which you can change after logging in). There will be a few problems due at the beginning of each class.

The second type of homework is done on paper and will be due each week on Wednesday at the beginning of class. Collaboration and discussion with other students on these assignments is encouraged, but only after you've made a serious attempt at the problems on your own. If you work with others on the written homework, you must note the names of any collaborators on each problem. You should still write up your solutions individually.

On the written homework, you should show the steps you took to obtain your answer. Your work will be graded on clarity as well as correctness; a reader with the requisite background knowledge should be able to understand the method you used without asking you for clarification, solving the problem themselves, or looking up a solution elsewhere.

You may not look up solutions online or in any written form. Use of outside software or calculators for anything except basic arithmetic is also not permitted. Adhering to these policies is part of your duty under the Honor Code.

No late homework will be accepted, with exceptions only for documented serious illness or other emergency. However, your two lowest-scoring Webwork assignments and your lowest-scoring written assignment will be dropped.

Getting stuck on problems is a normal part of the learning process. Much of the learning in this course will happen in the process of getting yourself unstuck. Please feel free to come to my office hours to discuss the homework problems.

Disability support

Any student with a documented disability seeking academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All such discussions will remain as confidential as possible. Students with disabilities will also need to contact Disability Support Services in the Allen Center.