Welcome to the Math 151A Calculus Sequence!

Math 151A-153A & 254A is an alternative version of Ohio State's calculus course offerings. Although the topics covered are essentially the same, this course differs from the standard calculus sequence in several respects:

- In this course, there is more emphasis on understanding fundamental concepts and how they arise in diverse contexts. You will see the ideas of calculus **applied** to various different types of problems, and you are expected to get a lot of practice doing this yourself. We hope that students will come out of this course not only with a new bag of mathematical tools, but also with a good sense of how they can be used.

- Functions form the basis for the study of calculus. In this course (as in real life) functions come in many different flavors—as graphs, tables, equations, formulas, or verbal descriptions—and often involve **a variety of letters/symbols as constants or variables**. If you are used to all functions being called $f(x)$, get ready for a surprise! This course will help you understand how functions look in the real world.

- Problems in this textbook are more varied than in a traditional text and generally require some in-depth thinking. They do not consist of just plugging numbers into a formula or following a step-by-step procedure. To do these **varied problems**, you will need to understand some key idea and think about how to apply it in a given situation. You may find this difficult at first, even if you've taken some calculus before. During recitations you will have opportunities to work with other students in small groups to discuss and solve problems. Additional help will be available from the instructors in their office hours.

- The sections in the textbook are not long and emphasize the most essential ideas. Although you may not be used to doing so in previous math courses, to learn well in this course **it is crucial to read the textbook!** Reading about an upcoming topic before class will prepare you to participate actively and enable class time to be used more productively. Moreover, only after really thinking about the ideas in the text will you be able to solve the problems. Worked-out examples in the textbook, and problems covered by the Student Solutions Manual (provided for your convenience), are not "templates" that can be directly imitated to complete other exercises. It is therefore very important to read the text with the aim of really understanding the concepts, so that you're better equipped to use them flexibly in many different settings.

- Many of the problems (in the text and on exams) **require you to give an explanation** of your solution. You are also to expected to explain your reasoning to other students in your recitation group. This may seem frustrating at times, but it is a great way to develop effective communication skills (invaluable in all kinds of careers), and will greatly enhance your understanding and retention of the material. As any teacher can tell you, explaining something to someone else is the surest way to learn it yourself!

Assessment Scheme

As in the standard calculus sequence, grades in Math 151A-153A & 254A are determined primarily by performance on midterm and final exams. In Math 151A and 152A, however, there is a special test called the "Gateway Exam". This is a differentiation or integration skills test which is graded pass-fail with no partial credit. Each student has 5 chances to pass this exam, and a penalty equivalent to a drop of one full letter grade will be incurred by anyone who does not pass by the 5th try. More information about the Gateway exam, as well as sample tests and practice problems will be posted on the course website.

Grades are typically based on the points you earn in

- *Recitations:* Scores from participation and attendance, homework, and groupwork.

- *Two midterm exams:* These aim to test your grasp of ideas and applications, so conceptual understanding and applied problems are emphasized more than computational skill. Exam questions may resemble homework or class examples in the techniques and type of thinking required, but you should not expect them to imitate any particular problems from the text.

- *Final exam:* A test with the same emphasis as the midterms, but about twice as long. The final will be comprehensive (that is, it includes material from the entire course); however, it places more weight on material not already covered by the midterms.

- *Gateway exam:* (Only in 151A and 152A.) Purely computational. You must get 5 out of 6 problems completely correct on a test in order to pass.

Grade Computation

IA = Introductory Assignment Score (out of 5)
R = Recitation Score (out of 40)
$M1$ = Midterm 1 Score (out of 40)
$M2$ = Midterm 2 Score (out of 40)
F = Final Exam Score (out of 80)

$TP1 = IA + R + M1 + M2 + F$ (standard total)
$TP2 = IA + R + .5(M1 + M2) + 1.5F$ (improvement total)

The larger of $TP1$ and $TP2$ will be your *Total Score*, denoted TS.
Your *base percent score* will be given by $\frac{TS}{205}$.

Your base percent score is then adjusted based on when you passed the Gateway:
$+3\%$ if you pass the Gateway the first time it is given
$+2\%$ if you pass the Gateway the second time it is given
$+1\%$ if you pass the Gateway the third time it is given
-10% if you do not pass the Gateway within the allotted 5 attempts

Your final course grade is determined by your adjusted percent score. You should expect grade assignments to follow the standard scale. I will not be assigning any letter grades until the end of the quarter (your midterm scores, etc will be recorded by the score), and so will not be curving anything

until the end of the quarter (it is most likely that no curve will be needed).

Sections to be covered

151A:
1.1–1.8, 2.1–2.6, 3.1–3.7, 4.1–4.7

(section numbers refer to the **fourth** edition of "*Calculus, Single and Multivariable*"
by Hughes-Hallett, Gleason, McCallum et al.)