Math 2250 Summer Course Syllabus

1. COURSE INFORMATION

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Office hours held during class work time

Boyd 302, 9:15-12:45 MTWRF (srsly!)
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Book: Hass/Weir/Thomas, University Calculus, Second Edition, Early Transcendentals

2. COURSE SCHEDULE

Topics	Sections	Day
Limits as a concept. Limit Rules. One-Sided Limits	2.1-2.2, 2.4	1
Average rates of change. Definition of Derivative	3.1	1
Product and quotient rules.	3.2-3.3	2
Derivative as a rate of change. Position, velocity and acceleration.	3.4	2
Objects in flight. Fitting, predicting, and intercepting.	Lab 1	3
Derivatives of trigonometric functions.	3.5	4
Changing units. Compositions. Chain Rule.	3.6	4
Implicit Differentiation.	3.7	5
Derivatives of Inverse and Logarithmic Functions.	3.8	5
Derivatives of Inverse Trig Functions.	3.9	6
Related Rates	3.10	6
First Exam	2.1-2.4, 3.1-3.10	7
Discussion of First Exam		(afternoon session)
Throwing a ball from a rotating arm.	Lab 2	8
Taylor's Theorem. Linear and quadratic approximations.	3.11 + extra	9
Maxima and Minima, Mean Values.	4.1-4.2	9
The First and Second Derivative Tests.	4.3-4.4	10
L'Hôspital's Rule. Newton's Method.	4.5 and 4.7	11
Second Exam (tentative)	2.1-2.4, 3.1-3.11, 4.1-4.5, 4.7	12
Discussion of Second Exam		(afternoon session)
Optimization Problems	4.6	13
Targeting with a rotating arm.	Lab 3	14-15
Antiderivatives and Differential Equations	4.8	16
Sums of natural numbers, squares and cubes. Limits of Sums.	5.1-5.2	17
Definite Integral. The fundamental theorem of calculus.	5.3-5.4	18
Indefinite Integral. u-substitution	5.5-5.6	19
Final Exam in Room 302 of Boyd	2.1-2.4, 3.1-3.11, 4.1-4.7, 5.1-5.6	July 2, 2014

3. PREREQUISITES

Students are expected to have a solid foundation in high-school algebra and trigonometry, equivalent to that offered in the MATH 1113 precalculus course, in order to enroll in the course. The course webpage contains a 23 question diagnostic self-test covering this material. Generally speaking, to be successful in this course, you should be able to answer at least 17 of these questions correctly. Students scoring less than 12 questions correct should not enroll in this course, but switch to MATH 2200 or MATH 1113.

4. Course Goals

Students will develop computational fluency with differentiation and integration. Students will learn to model and solve optimization problems using derivatives. Students will integrate and solidify their knowledge of calculus through real-world "laboratory" exercises based on applied mathmatics.

5. Disclaimer

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

6. Principal Course Assignments

The course will have two midterm exams and a final examination plus three "lab" assignments integrating and deepening our understanding of calculus. The lab assignments will be individual work, but students are allowed to consult with one another while working. Homework will be due weekly, generally on Fridays. Every Friday we will have a short memorization quiz at the start of class. These will be included in the homework grade.

For this class, we're using a web-based homework system called `WebWork`. The login link is

$$\texttt{https://webwork2.math.uga.edu/webwork2/}$$

Your username comes from your uga.edu email address. If your email address is `jones@uga.edu`, then your username is `jones`. Your password comes from your 810 number, but it's formatted a little bit oddly. If your UGAcard says your 810 number is `810 012 9770`, then your 810 number appears on our classroll as `810-01-2977` (the last 0 on the card is not actually part of your 810 number– it just means that this is your first UGAcard). Your password is then `810-01-2977`, **including the dashes**.

`WebWork` is different from your previous experiences with math homework. Until the assignment is due, **you can try the problems as many times as you like,** and the system will tell you whether or not you have the right answer. This lets you correct your work immediately.

After the assignment's due date, the system will show you the correct answer for each problem when you try it (but your answers won't be scored). The funny thing about `WebWork` is that **the due dates are absolute**. Since the system shows you the answers immediately after the due time, I can't give extensions on homework. You may complete assignments in advance if you want to.

You are welcome to work together on `WebWork` problems, but be warned: **the problems are a little different for each student**, so copying other students answers won't work. It is certainly possible to solve many of the homework problems using online tools such as Wolfram—Alpha. You should use these tools with care. If you are stuck on a problem, using the "Show steps" option on Alpha can give you good information about how to solve a problem. On the other hand, if you become dependent on tools like Alpha, you are likely to do very poorly on the exams where they are not available.

When you first login to `WebWork`, you'll see three buttons on the left. Use the "Change Email" button to enter your email address and the "Change Password" button to change your password. Then try "Begin Problem Sets" to see how the system works. You can select a set and print it out in PDF format to work out the problems on paper if you like. Your problems will be the same when you login again to enter the answers.

7. Grading and WP/WF Policy

The overall course grade is computed from homework, exam, and final grades by the formula:

(1) 10% for each of the three laboratory projects
(2) 20% for each of the two regular exams.
(3) 20% for the final exam.
(4) 10% for the homework assignments and in-class quizzes.

The laboratory assignments are considered to be equivalent to tests or term papers and assess your understanding of different material than the in-class exams. For this reason, much of the laboratory material will not be tested during the in-class exams.

After grades are calculated for each student using these weights, the instructor will rank the students by average and determine thresholds for grades of A, B, C, D, and F. Generally, these are somewhat lower than 90 %, 80 %, 70 %, and 60 % of the total points in the course. Though improvement and other circumstances are taken into account

in deciding thresholds for letter grades, students with a higher numerical average almost always receive higher letter grades than those with lower numerical averages.

In order to receive a grade of "WP" before the first exam, you must have scored at least 50 % of the homework points available by the date of withdrawal. After the first exam, this policy will remain in force for a two week grace period. After this period expires, you must have scored at least 50 % of the homework points **and** 50 % of the first exam points in order to receive a grade of "WP".

8. ATTENDANCE POLICY

Daily (or perfect) attendance is critical during the very short summer version of the course. Missing a day of summer class is roughly equivalent to missing a week of the regular class. You just can't do it and expect to catch up. Therefore, I need to be very strict about attendance during the summer. Basically, **you get one (1) excused absence. After that, I will withdraw you from the course.** If you oversleep, or are out too late the night before, just come late. It's better than missing class.

9. ACADEMIC HONESTY

Unfortunately, in recent years, academic dishonesty has been on the rise at the University. Therefore, let me be clear: **Academic dishonesty will not be tolerated. While academic honesty violations are always handled through the University process, the most common consequence for cheating on an exam is immediate withdrawal from the course with a grade of "WF". In some cases, this may be accompanied by a dishonesty transcript notation or other punishment.**

As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in A Culture of Honesty found at: `www.uga.edu/honesty`. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.

It is perfectly acceptable to work on homework problems in groups in this course. However, the help you should get from your fellow students should enable you to complete the problem on your own. Recruiting another student to complete the homework for you, or to simply provide answers to the problems, is a violation of the honesty policy.

10. REQUIRED COURSE MATERIAL

Some version of the book is required, but you're welcome to use the first edition (cheap!) instead of paying the exorbitant price for the second edition. Students are required to download and install the shareware "Anki" application to complete the memorization assignments.

11. MAKE-UP EXAMINATIONS

No makeup examinations will be given in the course. If you are absent from a scheduled exam, and your absence is excused (generally, this requires a medical or legal explanation, with supporting documentation), the portion of the course grade determined by the missing exam will be divided equally between the other exams (including the final exam). Students with an excused absence from both in-class exams and the final will be withdrawn or given a grade of "I".