

MATH 2250 Calculus I for Science and Engineering, Spring 2016, Section 24968

M 10:10–11:00 a.m., Boyd 322 TR 9:30–10:45 a.m., Boyd 302

Instructor: Harrison Chapman **Email:** hchapman@math.uga.edu **Office:** Boyd 427E
Course Webpage: <https://hchapman.github.io/classes/s2016-2250/>
HW Web: https://webwork.math.uga.edu/webwork2/Math2250_Chapman_S16
Office Hours: M 11:00–12:00 p.m. W 2:00–3:00 p.m.

COURSE DESCRIPTION & OBJECTIVES:

The student will understand the limit and the derivative both conceptually and operationally. The student will learn how to use calculus concepts to model and solve various typical problems in science and engineering, with particular emphasis on graphs, optimization problems, and basic integration problems. The student will learn to set up word problems clearly and concisely and to provide clear solutions. WeBWorK will be used as a homework server.

A primary goal is to develop understanding of the mathematical content described above, and how to use it to solve practical applications. Additional goals include the development of reasoning and problem solving skills. These goals may be achieved by preparing for and participating in daily lectures and discussion and working on assigned homework/quizzes/exams.

REQUIREMENTS AND ATTENDANCE POLICY:

There is a prerequisite of Math 1113 or placement. **Prompt, complete attendance** is expected at all classes. Please attend the **entire** class or do not attend at all; this is to preserve an effective learning environment for all students. Professional courtesy toward your instructor and your classmates is expected. Exams may be made up in the event of University of Georgia athletics (arrangements in advance only) or documented illness. There will be no make-ups or extensions for homework or quizzes.

TEXT:

Hass, Weir, Thomas; *University Calculus, Early Transcendentals*, 3rd (or 2nd) Ed, Addison/Wesley. You need to own, borrow, rent, or share a copy of this text.

TOPICAL OUTLINE: We will cover sections 2.1–2.6, 3.1–3.11, 4.1–4.8, and 5.1–5.6.

- (1) Functions, rates of change, limits.
- (2) Differentiation rules: polynomials and transcendental functions, sum, product, and quotient rules; the chain rule, implicit differentiation and differentiation of inverse functions.
- (3) Applications of differentiation: linear approximation, Newton's method, curve sketching and convexity, optimization problems, related rates problems, L'Hôpital's rule.
- (4) Anti-differentiation and ordinary initial value problems.
- (5) The definite integral and summation notation. Solution of ordinary differential equations by separation of variables.
- (6) The Fundamental Theorem of Calculus.
- (7) Areas between curves and some techniques of integration.

TESTS:

Two 75-minute exams will be given, each worth 18% of your grade. The tentative exam schedule is 3/1 and 4/12. The comprehensive common final exam will be scheduled for an evening during exam week.

LAB REPORTS:

During the course of the semester you will write three technical lab reports, where you will apply calculus to solve large problems of greater scale. Each lab will be worth 6% of your grade, totaling 18%.

QUIZZES:

Short reading comprehension quizzes will be assigned before we begin sections of material. You are expected to read each section of the book then before we cover it in class. The tentative schedule of reading quizzes is:

Topic (section)	Date of Reading Quiz
Rates of change (2.1)	1/14
Limits (2.2)	1/19
Continuity & the IVT (2.4-2.5)	1/26
Derivatives (3.1)	1/28
Derivative rules (3.3)	2/9
Position, velocity, and acceleration (3.5)	2/11
Chain rule (3.6)	2/16
Related rates (3.10)	2/23
First and second derivative test & concavity (4.3-4.4)	3/15
Optimization (4.6)	3/22
Antiderivatives (4.8)	4/5
Fundamental Theorem of Calculus (5.4)	4/21
Indefinite integration (5.5)	4/26

There will also be short pop quizzes on key course material during lecture. Exemptions for quizzes will be available for athletic, legal, or medical reasons (documentation required). There will be no make-ups or extensions of missed quizzes.

PROBLEM SESSIONS:

Most Monday class periods will be reserved for problem sessions. Students will first present a list of problems which they wish to work out as a class. Volunteers will then work out the problem on the board. Volunteers will receive bonus points towards their quiz grade.

HOMEWORK:

Homework is assigned through WeBWorK (free!), at https://webwork.math.uga.edu/webwork2/Math2250_Chapman_S16. Homework assignments will typically be due the Monday night after we complete a section in class. You are welcome to work on homework with your peers, although you will each need to submit your own assignments! There will be no make-ups or extensions of missed homework.

GRADING:

The following grading scale will be applied: 91-100 A, 89-90 A-, 87-88 B+, 81-86 B, 79-80 B-, 77-78 C+, 71-76 C, 69-70 C-, 60-68 D, below 60 is an F.

Grading break-down:

- 36%: Two exams, weighted equally at 18%.
- 26%: *Cumulative* final exam
- 18%: Three lab reports, weighted equally at 6%.
- 16%: In class quizzes (reading and pop) and attendance
- 4%: Online homework on WeBWorK

REQUIRED TECHNOLOGY:

You are welcome to bring a calculator (scientific *or* graphing) to class for help with computations, but it is not required. You are welcome to use calculators on homework assignments. Calculators **will not be permitted** during our in-class exams.

REMARKS AND ELECTRONICS POLICY:

Questions are encouraged at all times. Scheduling difficulties can be amicably settled by *prior* discussion. Using your cell phone, laptop (or any other device!) in class is inappropriate because it distracts both yourself *and* your classmates and thus degrades their overall classroom experience. Furthermore, if, in the instructor's opinion, device usage (or other behavior!) becomes a problem, the offending party will be removed from class.

Notice that there is no class on the dates **1/18** (MLK Day), and **3/7-3/11** (Spring break). The last day to withdraw from any course is **3/22** (this is *before* the scheduled date of the last in-class exam). The last day of lecture is **5/2**.

ACADEMIC HONESTY:

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. This policy defends the academic integrity of all student work, and will be uniformly applied to all students in the class.

ACADEMIC ACCOMMODATION:

Students with a disability or health-related issue who need a class accommodation should consult the following website: <http://drc.uga.edu/>

DISCLAIMER:

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