

Calculus for Business and Social Sciences Math 116 (Section 8)

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1 Basic Information

Classes meet. Tuesday and Thursday from 11:20am to 12:35pm, in Harbor Walk West room 213.

Text and Online Learning System. The main text is *Essential Calculus with Applications* by Franklin Wright, Spencer Hurd, and Bill New (3rd edition), from [Hawkes Learning](#)¹. This is available as PDF as part of the online Hawkes Learning System (“Hawkes” for short), which will be used for homework and quizzes. Thus you should get Hawkes access, which is best done through a link in OAKS and is included in “Cougar Complete” if you opt in to that program; see also the [Hawkes Learning Student Introduction](#)².

(There is also a printed version of the text but that is not required, and is not included in Cougar Complete.)

Professor’s Office Hours. To see me out of class, there are two options:

- After any class.
- By appointment: arrange by email or by talking with me in-class.

Professor’s Office. Room 344, Robert Scott Small Building, and a location in Harbor Walk West to be announced later.

Professor’s Email Address. lemesurierb@charleston.edu

Professor’s Website. <http://lemesurierb.people.charleston.edu/>, but once the course starts, most online communication will be through OAKS and the Hawkes Learning System.

Prerequisites. Placement, MATH 110, or MATH 111.

2 Course Objectives and Student Learning Outcomes

The goal of this course is to learn the calculus tools for use in business and the social sciences. There are two main parts to this:

¹hawkeslearning.com

²www.hawkeslearning.com/Students.htm

- *derivatives*, which measure things like the slope of a curve, the speed of a moving object and more generally how fast one quantity (say cost or population size) changes in response to change in some other quantity (say quantity produced or time.)
- *integrals*, which measure things like the area under a curve, the distance traveled by a moving object based on information about its speed and more generally the total change in a quantity based on information about how fast it is changing.

In more detail, my goal is to enable students to understand and communicate the mathematics of the world around them, to improve problem-solving and critical thinking skills, and to enhance student's qualitative and quantitative reasoning skills by using mathematical models to represent problem situations graphically, algebraically, numerically and verbally. Our focus will be on understanding aspects of calculus such as functions, limits, continuity, derivatives, integrals, and the application of these ideas to real world problems, specifically those related to Business, Economics, and Social Sciences.

After successfully completing this course, students will be able to

1. *compute and interpret derivatives and antiderivatives.*
2. *use functions and graphs to model phenomena relevant to business and the social sciences.*
3. *produce and interpret graphs of functions.*
4. *use calculus to solve optimization problems.*

I will also emphasize some generally useful mathematical skills:

1. Learning correct use of mathematical notation and organization of thinking and written presentations so that it can be understood by peers and instructors.
2. Facility and accuracy in basic computational manipulations so that these steps do not get in the way of understanding and solving the main questions at hand.
3. Reading, working exercises and developing concise written summaries of important formulas, notation and ideas, to help with study and test preparation. Students will be allowed to use your brief hand-written summaries of formulas in tests and the final exam, but not in the quizzes: committing to memory the most important new material is an important study skill too.

These outcomes will be assessed on the mid-term tests and the final exam.

Students are expected to do not only the graded online assignments and class exercises but also to read each section of the text that is covered in class, and to attempt the exercises set for each section. This is because, more broadly, it is expected that a majority of the learning in this or any College course comes through students' efforts outside the classroom.

3 General Education Student Learning Outcomes

This course can be used to satisfy some general education requirements, for which there are some standard goals. Students are expected to display a thorough understanding of the topics covered. In particular, upon successful completion of the course, students will be able to

1. model phenomena in mathematical terms,
2. solve problems using these models, and
3. demonstrate an understanding of the supporting theory behind the models apart from any particular application.

These outcomes will be assessed on the tests and the final exam.

4 Computers and Calculators

We will use computers in class for online quizzes and other activities, so you will need to bring one to class.

A calculator will be needed, particularly for the tests and final exam. For homework you could use an online calculator like [The Desmos Scientific Calculator](#)¹, but for written work like the tests and final exam, a hand calculator will be needed. Such a calculator must be one that does *not* include symbolic computation abilities. The standard recommendation for math courses is a Texas Instruments TI-83 or TI-84; if you intend to use a different calculator, check with me if it may be used.

Apart from such calculators, no other “tech tools” (such as web-sites that help with mathematical calculations) may be used during quizzes, tests or the final exam: in particular, the Hawkes website should be the only one open during a quiz.

P. S. The above Desmos Scientific Calculator does not do graphs, but for that there is [The Desmos Graphing Calculator](#)², which I also use in class sometimes. The Desmos calculators are also available as free apps for Android and iOS.

5 Exercises, Graded Work and Grading Scheme

5.1 Online Exercises and Homework

The Hawkes Learning System will be used for online exercises, both as homework and in-class; these are referred to in Hawkes as "Lessons", and there are one or two for each section of the text that we cover. Each lesson has three modes:

- *Learn*, which is akin to a complete online textbook,
- *Practice*, which leads you through exercises in the style of those that will then be in ...
- *Certify*, which is the exercises for actual credit.

This uses a "mastery" approach: when you do not get the correct answer on a topic it offers a hint, and can send you back from Certify mode to Practice mode.

I encourage you to write down your working (on paper or a tablet or such) and then enter your results; for one thing, if you have questions about an exercise, showing me your written work can help me to help you.

5.2 Weekly Quizzes

There will be a short quiz in most Thursday classes; the questions will be similar to some of the exercises for the topics covered since the previous quiz.

These will be done *both on paper and online*. That is, you will see the questions in the Hawkes Learning System, do your work on paper to hand in, and also enter your answers online. I will collect this written work use it to give partial credit (which "Hawkes" does not give), and to check attendance, so ***you must hand in your written work***.

5.3 Group Work

In some classes there will be written exercises to be done in small groups.

¹www.desmos.com/scientific

²www.desmos.com/graphing

5.4 Mid-term Tests

There will be two mid-term written tests, provisionally scheduled for the Thursday classes of *September 19* and *October 24*.

These will be *partially cumulative*: each will focus on material covered since the previous test, but questions can often rely on ideas and methods learned earlier in the semester. (Math is like that.)

If you miss a test for a good, documented reason, I will have you do the test as homework for practice; then the score can be replaced by your results on the corresponding part of the final exam.

5.5 Final Exam

The final exam will be held on *Saturday December 7 from 1 to 3 pm* (To check your exam schedule, see the [Academic Calendars site](#)¹.) It will cover the whole syllabus, but with more emphasis on topics seen after the second test.

5.6 Grading Scheme

- The online homework will count for 20% of the course total,
- the quizzes and group work will count for 20%,
- each mid-semester test will count for 15%,
- and the final exam will count for the remaining 30%.

However, if the final exam score is better than the lowest test score or the quiz average, the exam score will carry an additional 10% weight and that low score will count for 10% less.

The aggregate score guarantees at least the following grades:

A	A ⁻	B ⁺	B	B ⁻	C ⁺	C	C ⁻	D ⁺	D	D ⁻
90–100	87–89	84–86	80–83	77–79	74–76	70–73	67–69	64–66	60–63	57–59

6 Participation Requirements

Attendance to all classes is expected, as is active participation in all the work described above. You are responsible for knowing what happens in each class including assignments, information about test topics, and due dates. Thus if you miss a class, check for news, either from a classmate or from me; checking the course's section in OAKS should help.

Absence from a test or more than three quizzes without adequate explanation will lead to failing the course; thus if you miss any of these, contact me promptly to explain why.

7 Additional Help from Tutors in the Math Lab

You can get tutoring help in the Math Lab, located in the Addlestone Library, one of the walk-in labs at [the Center for Student Learning](#)¹. There you will find students and some professors who will help you with any specific problems or questions you may have.

The hours are 10am-9pm on Monday through Thursday and 5pm-9pm on Sundays (with limited hours on Fridays), starting on Monday, September 2.

¹charleston.edu/registrar/calendar/

¹charleston.edu/student-learning/

8 Accommodations for Students with Disabilities

If you have a documented disability, please contact me during the first two weeks of class or as soon as you have been approved to receive accommodations, so that reasonable accommodations can be arranged. Approval for such accommodations is arranged through the Center for Disability Services: see <https://charleston.edu/disability-services/>

9 College of Charleston Honor Code and Academic Integrity

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Cases of suspected academic dishonesty will be reported directly to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration or working together without permission is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Students can find the complete Honor Code in this page about [the Honor code](#)¹, in [the Student Handbook](#)².

10 Some Important Dates and Times

Monday August 26	Last day to drop/add courses.
Monday September 2	Labor Day—classes <i>do</i> meet.
Monday September 2	The Math Lab at the Center for Student Learning ¹ opens.
Saturday and Sunday, September 21 and 22	Storm make-up days, if needed (classes will be made-up online).
Thursday September 19	Mid-term Test 1, proposed date.
Thursday October 24	Mid-term Test 2, proposed date.
Friday October 25	Last day to withdraw with a grade of "W".
Monday and Tuesday, November 4 and 5	Fall Break.
Saturday and Sunday, November 9 and 10	Storm make-up days, if needed (classes will be made-up online).
Tuesday November 26	Our last class meeting.
Wednesday November 27–Sunday December 1	Thansgiving Break.
Monday December 2	Last day of classes.
Tuesday December 3	Reading Day.
Wednesday December 4 to Monday December 9	Final Exam Period.
Saturday December 7, 1pm–3pm	Final Exam.

¹charleston.edu/student-handbook/handbook/honor-code.php

²charleston.edu/student-handbook/handbook/

¹charleston.edu/student-learning/