

# Introductory Calculus (Math 120, Section 10), Fall 2018

**Classes meet:** Monday, Tuesday and Thursday 4–5:15, in MYBK 117

**Professor:** Dr. Brenton LeMesurier

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**Office hours:** are to be arranged during the first week of classes; for now I am available immediately before and after each class, and by appointment.

**Final Exam:** Tuesday December 11, 4–7 pm, in our normal classroom.

**Online resources:** Most homework will be done using the WebAssign online system at <http://www.webassign.net/>

There is also a site for this course in the College's Learning Management system OAKS at <https://lms.cofc.edu>

## Course Objectives and Student Learning Outcomes

The main goal of this course is for students to learn the basic concepts and skills of solving mathematical and scientific problems described by functions that vary “smoothly” (with no jumps, breaks or sharp corners in their graphs) and to solve problems whose solutions can at best only be approximated with algebra, geometry and trigonometry (like the areas of most regions), but can be solved exactly with the methods of calculus.

Applications include the description of motion in terms of velocity and acceleration, models of population growth, chemical reaction rates and growth of the value of an investment, and optimization problems such as minimizing the cost of a task or maximizing what can be achieved with a fixed amount of resources. This material is covered in the first five chapters of the text, with a few sections omitted or left until Calculus 2 (Math 220).

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

By the end of the course, students should be able to:

- Calculate a wide variety of limits, including derivatives using the limit definition and limits computed using l'Hôpital's rule;
- Demonstrate understanding of the main theorems of one-variable calculus (including the Intermediate and Mean Value Theorems, and the Fundamental Theorem of Calculus) by using them to answer questions;
- Compute derivatives of functions with formulas involving elementary polynomial, rational, trigonometric, inverse trigonometric, exponential and logarithmic functions;
- Use information about the derivative(s) or antiderivative of a function (in graphical or symbolic form) to understand a function's behavior and sketch its graph;
- Construct models and use them to solve related rates and optimization problems;
- Recognize functions defined by integrals and find their derivatives;
- Approximate the values of integrals geometrically or by using Riemann sums;
- Evaluate integrals by finding simple antiderivatives and by applying the method of substitution.

## 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 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 in the final exam.

## WebAssign for Online Homework

You will also need access to the WebAssign online homework system.

One way to get this is bundled with the loose-leaf version of the text book.

Otherwise, you can buy WebAssign access through its website <http://www.webassign.net>

You can enroll in WebAssign and start using it without paying initially; payment is due ten days into the semester.

## Calculators

It might be useful to have a graphing calculator, and the standard recommendation is the Texas Instruments TI-84 Plus. However, many other choices of "calculating device" can work too, including phone apps, computer software and websites, and I will demonstrate some of them.

Such tools will be used for some homework and in-class exercises, but not on tests or the final exam.

## Exercises, Assessment, and Grading

**WebAssign Online Homework.** There will be short graded homework assignments on each section, done online with WebAssign and normally due two class days after we finish the section. Some parts of WebAssign homework must be submitted on paper, for example when it involves sketching graphs.

WebAssign allows you to make several attempts at each problem, including coming back later to retry a problem after studying some more or getting help from me. It also allows you to ask me questions through the system, using the "Ask Your Teacher" link, and this is more convenient than regular email, because it lets me see your work so far on an exercise.

I encourage you to start work on the assignment on each section as soon as we have covered it in class!

**Homework Exercises for Practice** These notes give a list of exercises for each section covered, to help your study. These are not for grading but doing them is an *essential* part of the course; like learning a musical instrument or sport, success in mathematics requires a lot of practice beyond what your instructor sees and grades you on.

**In-class exercises.** There will be some in-class exercises for extra credit. You are encouraged to work on these in groups and ask me questions, but you should each write up and hand in your own version of the results.

**Quizzes on Tuesdays.** There will be a short quiz on most Tuesdays; the questions will be similar to some of the homework exercises for the sections covered since the previous quiz.

**Tests.** There will be three in-class tests, provisionally scheduled for the Thursday classes of **September 13, October 11 and November 15**. 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.)

There are no make-up tests. If you miss a test for a good, documented reason, the score can be replaced by your results on the corresponding part of the final exam. Such absences should be documented through The Office of the Associate Dean of Students: see <http://studentaffairs.cofc.edu/about/services/absence.php>

**Final exam.** The final exam will be held on **Tuesday December 11, 4–7 pm**. This will cover the whole syllabus.

**Grading scheme.** The combined scores for assignments and in-class work will count for 15% of the course total, each test will count for 20%, and the final exam score will count for the remaining 25% in the course total.

**However,** if the final exam score is better than the lowest test score or the assignment-classwork average, the exam score will carry an additional 10% 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	67-79	64-66	60-63	57-59

## Participation Requirements

I generally do not take the roll in class, but do require active participation in all the work described above, and you are responsible for knowing what happens in each class, including which sections have been covered, exercises and assignments, information about test topics, and due dates.

Absence from a test or failure to attempt any three WebAssign assignments, quizzes, or in-class exercises (unless adequately excused) will lead to a W/A: withdrawal due to absence. So if you miss a class you should get notes, check assignments and find out about any other announcements, and if you miss a test, you should contact me promptly to explain why.

## Office Hours, and Additional Help from Tutors in the Math Lab at CSL

I will hold office hours at times to be arranged with the class, as well as being available immediately after classes.

You can also get tutoring help in the Math Lab, located in the Addlestone Library, one of the walk-in labs at the Center for Student Learning: <http://csl.cofc.edu/labs/math-lab/> There you will find students and some professors who will help you with any specific problems or questions you may have.

## Accommodations for Students with Disabilities

If there is a student in this class who has a documented disability and has been approved to receive accommodations through the Center for Disability Services/SNAP (Students Needing Access Parity), please come and discuss this with me during my office hours.

See also <http://disabilityservices.cofc.edu/accommodations/>

## Honor Code

Any violation of the College's Honor Code will be reported to the Honor Board. For more details, see <http://studentaffairs.cofc.edu/honor-system/> and the Student Handbook at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/>

## Some important dates and times

<b>Monday August 27</b>	Last day to drop/add courses.
<b>Monday September 3</b>	Labor Day — classes <u>do</u> meet.
<b>Thursday September 13</b>	Test 1 (proposed).
<b>Saturday October 6</b>	Storm makeup day, if needed.
<b>Thursday October 11</b>	Test 2 (proposed).
<b>Wednesday October 24</b>	Last day to withdraw with a grade of "W".
<b>Monday November 5</b>	Fall Break (or storm make-up day).
<b>Tuesday November 6</b>	Fall Break and Election Day — no classes.
<b>Thursday November 15</b>	Test 3 (proposed).
<b>Wed. November 21 – Sun. November 25</b>	Thanksgiving Break — College closed; no classes.
<b>Saturday December 1</b>	Storm makeup day, if needed.
<b>Monday December 3</b>	Last day of classes.
<b>Tuesday December 11, 4–7 pm</b>	Final Exam, in the normal classroom, MYBK 117.
<b>Friday December 14</b>	Grades available on MyCharleston by 5pm.