

**Math 231, Section 1, Spring 2018**  
**Calculus of Functions of a Single Variable 1**

1/11/2018

**Lecture times:** TuTh 2:00 pm – 3:15 pm  
**Lecture location:** Phillips 215  
**Instructor:** Linda Green  
**Office:** Phillips 338  
**Office Hours:** M 3:30 – 4:30, Tu 3:30 – 4:30, W 2:30 – 3:30, Th 9:30 – 10:30, F 9:00 – 10:00, and by appointment  
**Email:** [greenl@email.unc.edu](mailto:greenl@email.unc.edu)  
**Course website:** see Sakai

**Recitation times:** Fridays  
**Recitation locations:** Phillips 224, 383, or 367  
**TAs:** Joseph Graves, Sean Rogers, Avery Wilson  
**TAs Email:** [jlgraves@live.unc.edu](mailto:jlgraves@live.unc.edu),  
[rogersst@live.unc.edu](mailto:rogersst@live.unc.edu), [avwi1407@live.unc.edu](mailto:avwi1407@live.unc.edu)

**Materials:**

Textbook: *Calculus: Early Transcendentals* by Briggs, Cochran, Gillett, 2nd Edition. Access to an e-book comes with access to MyMathLab.

MyMathLab: You will need access to MyMathLab for homework and in-class clicker questions. If MyMathLab did not come with your textbook, you need to purchase it separately. See the information on homework below.

Piazza: Please use Piazza instead of email to ask questions about homework problems and logistics. Other students and the instructors can answer them there for the benefit of all students. See details below.

Calculator: You will need a basic scientific calculator. I recommend a graphing calculator (e.g. TI-84 or TI-89). A graphing calculator app is fine for class and homework but cannot be used on in-class quizzes. Calculators are not permitted on tests or on the common final exam.

Other: Supplementary materials including course notes will be posted on the Sakai. Videos are on the instructor's YouTube channel and links to the videos are posted on Sakai.

**Placement:** Only students who scored 600 or better on the SAT 2 Math Level 2 test, scored 29 or higher on the ACT math subject test, scored a 2 on the AP Calculus AB or BC exam, or passed Math 130 with a C- or higher may register for 231.

**Course Description:** Math 231 is designed to provide a detailed introduction to the fundamental ideas of calculus. It does not assume any prior calculus knowledge, but the student is expected to be proficient working with functions and their graphs as well as manipulating variable expressions and solving equations using algebra.

The course is divided into four units:

- **Unit I: Functions and Limits**
- **Unit II: Derivatives**
- **Unit III: Applications of Calculus**
- **Unit IV: Integration**

**Course Objectives:**

- Calculate limits of functions; explain the relationship between a function and its graph and its limit at a point.
- Define a derivative using limits and explain the geometric significance; evaluate derivatives of a given function.
- Apply the concepts of limits and derivatives to real world problems and sketching curves.
- Evaluate basic integrals using anti-derivatives and u-substitution; recognize the geometric significance of an integral.
- Use the Fundamental Theorem of Calculus to relate derivatives and integrals.

**Class Structure:**

- Students are expected to prepare for each Tuesday/Thursday class by reading the text and / or watching assigned videos, and then completing a short pre-class assignment on MyMathLab. The pre-class assignments are due before the start of class.
- Classes on Tuesdays and Thursdays will be lectures. The instructor will post a skeleton version of the notes on Sakai before each class and a filled in copy of the notes a few days after class.
- During the Friday recitations led by the TAs, students will solve problems on topics related to the current lectures and homework.

**Math 231, Section 1, Spring 2018**  
**Calculus of Functions of a Single Variable 1**  
1/11/2018

**Homework:** Please refer to the schedule on MyMathLab for homework due dates. Please refer to the instructions below to set up your MyMathLab account. Your lowest homework score will be dropped if at least 80% of students complete the mid-semester course evaluation. Your second lowest homework score will be dropped if at least 80% of students complete the course evaluation at the end of the term.

**Pre-class assignments:** There will be pre-class MyMathLab assignments for most classes, due by the start of class. Your scores on the pre-class assignments will be included in your homework grade. The lowest two scores on pre-class assignments will be dropped.

**Clicker questions:** MyMathLab will also be used for in-class clicker questions using Learning Catalytics. Clicker questions will be graded for participation only. The lowest 4 scores will be dropped.

<b>Website:</b> <a href="http://www.pearson.com/mylab">www.pearson.com/mylab</a>	course ID: <b>green02113</b>
Go to <a href="http://www.pearson.com/mylab">www.pearson.com/mylab</a> Under Register, select Student Confirm you have the information needed, then select OK! Register now Enter your instructor's course ID: green02113 , and Continue Enter your existing Pearson account username and password to Sign In . You have an account if you have ever used a MyLab or Mastering product. » If you don't have an account, select Create and complete the required fields Select an access option. » Enter the access code that came with your textbook or that you purchased separately from the bookstore, or » Buy access using a credit card or PayPal, or » Get temporary access From the You're Done! page, select Go To My Courses On the My Courses page, select the course name Math 231 Spring 2018 to start your work.	

**Piazza:** Instead of emailing the instructor or the TAs with questions about homework problems or logistics, please post your questions on Piazza. Other students and the instructor and TAs can answer them there for the benefit of all students. If you were not already automatically added to Piazza, you can also register yourself here: [piazza.com/unc/spring2018/math231](http://piazza.com/unc/spring2018/math231).

**Tests and Quizzes:**

There will be a quiz given some weeks. Usually, the quiz will be given during recitation. Sometimes, the quiz will be online through MyMathLab. Quiz topics and format will be announced in advance during the lecture or posted on Sakai. Your quiz scores and recitation problem scores will be pooled together into one grading category, and the lowest two scores in this category will be dropped.

There will be three tests during the semester. Their tentative dates are as follows:

- **Test 1 2/8**
- **Test 2 3/8**
- **Test 3 4/17**

No make-up tests or quizzes will be given. However, the grade on the final will be used to replace one missed test, or the lowest test grade, if the final exam score is higher.

**The comprehensive final exam will be on Thursday, May 3 from 4:00 – 7:00 pm.**

The final exam is given in compliance with UNC's final exam regulations and calendar, and will not be given prior to this exam date. In order to take the make-up exam after this date, you must have an official examination excuse, signed by a Dean or authorized agent of the Dean (in Steele Building). You must bring this excuse, along with a picture ID, to the make-up exam.

**Grading:** All grades will be assigned according to a 10-point scale. That is, 93 – 100 is A, 90 – 92 is A-, 87 – 89 is B+, 83 – 87 is B, 80 – 82 is B-, etc. Your course grade will be determined as follows:

**Math 231, Section 1, Spring 2018**  
**Calculus of Functions of a Single Variable 1**

1/11/2018

<b>MyMathLab:</b>	<b>14 pts.</b>
<b>Quizzes and Recitation Problems:</b>	<b>8 pts.</b>
<b>Tests:</b>	<b>40 pts.</b>
<b>Final Exam:</b>	<b>38 pts.</b>
<b>Total :</b>	<b>100 points</b>

There will be minimum final exam grade required in order to receive a C- for the course (it will be below 70%), and a minimum final exam required in order to pass the course (it will be below 60%). This will supersede any other grading policies. In this way, appropriate placement into courses requiring Math 231 as a prerequisite will be assured.

**Late work:** You may request a 2-day extension directly from MyMathLab on online homework with a 25% penalty on unanswered questions. No make-up tests or quizzes will be given. Recitation problems must be completed in groups in recitation and may not be made up or submitted in advance.

**Honor Code:** It is expected that each student in this class will conduct him or herself within the guidelines of the UNC Honor System, described at <http://studentconduct.unc.edu/students>.

In this class, all tests and exams must be done individually and are closed book and closed notes. It is an instance of cheating to give or receive help on a test or exam, except from the instructor. Quizzes must also be done individually. In class quizzes are closed book and closed notes, and online quizzes taken outside of class are open book and open notes unless otherwise specified. On homework assignments and pre-class assignments, students are encouraged to work together in pairs or small groups, provided that all participants are contributing and the collaboration benefits the learning of all involved. Simply copying or trading answers is an instance of cheating. On in-class problem solving assignments and Poll Everywhere questions, students are encouraged to work together. If you are not sure if collaboration is permitted, please ask!

In addition to avoiding actual academic dishonesty, please avoid appearances of academic dishonesty. In particular, please silence and put away cell phones before any exams are handed out and please avoid the appearance of looking at other students' papers. In order to maintain a proper testing atmosphere, the instructor may ask students to switch seats before or during an exam.

Students who observe a violation of the honor code should report it to the instructor. The instructor will report any suspected honor code violations to the Student Attorney General.

**Additional Resources:**

- The Math Department sponsors free tutoring in the Math Help Center in 237 Phillips Hall. Hours are typically M – Th 10 – 6 and F 10 - 3. See <http://math.unc.edu/for-undergrads/help-center> for schedule updates and other details.
- Free tutoring is available on the second floor of Dey Hall on Tues. and Wed. evenings from 6 – 9 pm.
- The [Learning Center](#) facilitates a weekly study group for Math 231 called Math Plus that will meet on Tuesdays from 4:45 – 6:00. For details, see <http://learningcenter.unc.edu/stem/math-plus/>
- The Math Department keeps a list of paid tutors in the main office in Phillips 329.
- Copies of final exams from previous years are available at <http://math.unc.edu/for-undergrads/old-finals>.

**Math 231, Section 1, Spring 2018**  
**Calculus of Functions of a Single Variable 1**  
1/11/2018

**SCHEDULE OF INSTRUCTION**

WEEK	START DATE	SECTION	TOPIC	MML DUE DATE
1	1/11	2.2	Syllabus, Orientation to MyMathLab Definitions of Limits	Fri: 1/12 Mon: 1/15
2	1/16	2.3 2.4 2.5	Techniques for Computing Limits Infinite Limits Limits at Infinity	Fri: 1/19 Mon: 1/22 Mon: 1/22
3	1/23	2.6 3.1	Continuity Derivatives	Fri: 1/26 Mon: 1/29
4	1/30	3.2 3.3 3.4	Working with Derivatives Rules of Differentiation The Product and Quotient Rules	Fri: 2/2 Fri: 2/2 Mon: 2/5
5	2/6 2/8	3.5 <b>TEST 1</b>	Derivatives of the Trigonometric Functions <b>Sections 2.1 – 2.6 and 3.1 – 3.5</b>	Mon: 2/12
6	2/13	3.6 3.7	Derivatives as Rates of Change The Chain Rule	Fri: 2/16 Mon: 2/19
7	2/20	3.8 3.9 3.10	Implicit Differentiation Derivatives of Logarithmic and Exponential Functions Derivatives of Inverse Trig Functions	Fri: 2/23 Fri: 2/23 Mon: 2/26
8	2/27	3.11 4.1	Related Rates Maximum and Minimum Values	Fri: 3/2 Mon: 3/5
9	3/6 3/8	4.2 4.3 <b>TEST 2</b>	What Derivatives Tell Us about the Shape of a Curve Graphing Functions <b>Sections 3.6 – 3.11 and 4.1</b>	Mon: 3/19 Mon: 3/19
10	3/20	4.4 4.5	Optimization Problems Linear Approximation and Differentials	Fri: 3/23 Mon: 3/26
11	3/27	4.6 4.7 4.8	Mean Value Theorem L'Hospital's Rule Newton's Method	Fri: 3/30 Fri: 3/30 Mon: 4/2
12	4/3	4.9 5.1	Antiderivatives Approximating Area	Fri: 4/6 Mon: 4/9
13	4/10	5.2 5.3	The Definite Integral The Fundamental Theorem of Calculus	Fri: 4/13 Mon: 4/16
14	4/17	<b>TEST 3</b> 5.4	<b>Sections 4.2 – 4.9 and 5.1 – 5.2</b> Working with Integrals	Mon: 4/23
15	4/24	5.5	The Substitution Rule Wrap up and Review	Fri: 4/27
		<b>FINAL</b>	<b>Thursday, May 3 from 4:00 – 7:00 pm</b>	

All MyMathLab homework assignments are due by 11:59 PM on the indicated date. Before class assignments are due at the start of class. This schedule may be changed. The instructor will notify students of any changes.

**Disclaimer:** The instructor reserves the right to make changes to the syllabus, including due dates and test dates. Changes to MyMathLab due dates can be found on the MyMathLab site. Other changes will be announced in class or via Piazza or email.