Math 130 Precalculus, Section 002
Spring 2019
01/01/2019

Class times: MWF 10:10 – 11:00 am
Class location: Phillips 335
Instructor: Linda Green
Email: greenl@email.unc.edu
Office location: Phillips 338
Office hours: M 3:30 – 4:30, W 3:30 – 4:30, F 12:30 – 1:30 and by appointment. See Piazza for updates to office hours.
Note: Students can attend the office hours of ANY Math 130 instructor. Office hour updates are posted on Piazza.
Course Coordinator: Linda Green, greenl@email.unc.edu, Phillips 338

Materials:
ALEKS: This class will use the ALEKS online system for homework. See instructions for signing up below.

Textbook: The textbook is *Precalculus* by Miller, 1st Edition. When you purchase ALEKS, you can choose to include an ebook of the textbook for about $10 more. I encourage you to do so, because the ebook includes many videos as well as additional problems and explanations and serves as a good reference for the class. However, you are not required to buy it if you are comfortable using class notes and online explanations given in ALEKS instead.

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.

Poll Everywhere: You will need to register for Poll Everywhere to answer questions in class using your cell phone or laptop. See the instructions below.

Calculator: You will need a basic scientific calculator or a calculator app. A graphing calculator (e.g. TI-84 or TI-89), or a graphing calculator app, can be helpful for visualizing functions and checking answers on homework. Calculators will not be allowed on tests or the final exam unless otherwise specified.

Videos: Instructional videos are posted on Sakai > Warpwire. Additional videos are available within ALEKS and the ebook.

Math Help Center: The Math Help Center in Phillips 237 is open for drop in tutoring M – Th 10:00 – 6:00 and F 10:00 – 3:00. Students are expected to visit the Math Help Center for additional help and instruction outside of class.

Other: Supplementary materials will be posted on Sakai in the Lessons tab and in the Resources tab.

Placement:
Placement information is located at http://math.unc.edu/for-undergrads/placement-info . In order to take Math 130, students need one or more of the following prerequisites:

- A score of 520 or higher on the SAT Subject Test, Math, Level 1 or 2
- A score of 27 or higher on the math portion of the ACT
- A passing grade in Math 110.

Course Description:
The main goal of Math 130 is to prepare students for the calculus sequence Math 231-233. The course is divided into the following main topics:

- Function Properties and Inverses
- Trigonometry
- Conics
- Parametric Equations
- Polar Coordinates

Course Objectives:

- Analyze features of functions and their graphs, including domain and range, symmetry (even / odd, periodicity), increasing decreasing behavior, maximums and minimums
- Graph trig functions and relate features of their graphs (period, amplitude, phase shift) to features of their equations
- Use trig functions to solve problems involving triangles
- Use trig functions to describe periodic phenomena
- Solve equations involving trig functions
- Graph parabolas, ellipses, and hyperbolas and relate features of their graphs to features of their equations
- Convert between Cartesian, polar, and parametric representations of equations and graphs

Class Structure:

- Students are expected to prepare for each class by watching assigned videos and completing before-class assignments posted on ALEKS.
- Class time will be spent on interactive lecture and problem solving

ALEKS:
This class will use the ALEKS online system for all homework, for before-class assignments, for periodic knowledge checks, and possibly for parts of tests. Please sign up at www.aleks.com using the class code LM9R3-XERCF. You can use the financial aid code B9E2E-0752F-9B8BA-9D804 to get two weeks of free access before you have to pay. The ALEKS program will give you a diagnostic test and then give you problems and explanations that adapt to your needs. In this way, you will only work on topics that you personally need to practice, and you won't waste much time on problems that you already know how to do. Please budget at least 2 hours for the diagnostic test and give it your best effort, since an accurate diagnostic test will save you time in the long run. You do not have to complete it in one sitting, but please do complete it before the semester starts if possible.

Piazza: Instead of emailing the instructor with questions about homework problems or logistics, please post your questions on Piazza. Other students and the instructors can answer them there for the benefit of all students. If you were not already automatically added to Piazza, you can register yourself here: piazza.com/unc/spring2019/math130
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Poll Everywhere Questions:
During lecture, the instructor will ask questions for all students to answer using Poll Everywhere on their phones or laptops. Poll Everywhere questions will be graded for participation only, and not for the correctness of the response. The lowest 6 scores on Poll Everywhere will be dropped before taking an average for the participation grade.

In order to get credit for answers, all students, including those who have registered previously for Poll Everywhere prior to 8/6/2018, should go to poll.unc.edu, click Student Account Registration and log in with Single-Sign-On. Students who wish to respond to polls via text messages can register their cell phones at any time. After registering, students may log in at either polleverywhere.com or using the Poll Everywhere mobile app. Be sure to go through UNC's website listed above and do NOT sign up directly at polleverywhere.com. There is no charge for students to use Poll Everywhere. Students who have registered for Poll Everywhere for another UNC course since 8/6/2018 do not need to register again for this course.

Projects:
Students will complete an applications project in groups of 3 – 4 students. Students can chose a topic involving Radiology, Biology, Computer Science, or possibly other topics.

Tests:
There will be three tests. Tests may be given through MyMathLab, or on paper, or as a combination. The tentative test dates are as follows:

- **Test 1 Feb 6**
- **Test 2 Mar 6**
- **Test 3 Apr 10**

The comprehensive final exam will be on Thursday, May 2 from 4:00 pm – 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 a make-up exam after this date, you must have an official examination excuse, signed by a Dean or authorized agent of the Dean. You must bring this excuse and a picture ID to the make-up exam.

Dropped Scores:
If at least 80% of students complete the mid-semester survey, the lowest two ALEKS before-class assignment scores will be dropped. If at least 80% of students complete the course evaluation at the end of the semester, the lowest ALEKS objective score will be dropped.The lowest 6 PollEverywhere scores will be dropped. The lowest test score (or a missed test score) will be replaced by the final exam score, if the final exam score is higher.

Grading:
Course letter grades will be assigned as follows.

93 - 100	A	77 - 79	C+
90 – 92	A–	73 – 76	C
87 - 89	B+	70 - 72	C–
83 – 87	B	67 - 69	D+
80 – 82	B–	60 – 66	D
		0 - 59	F

There are no grades of D- or A+

Your course grade will be determined as follows:

ALEKS Objectives	**5%**
ALEKS Pie Completion	**5%**
ALEKS Before Class Assignments	**2%**
PollEverywhere	**2%**
Project	**8%**
Tests	**45%**
Final Exam	**33%**

If a student misses a test, then the 0 for the missed test will replaced by the final exam score. If a student does not miss any tests, then the lowest test score will be replaced by the final exam score if the final exam score is higher.

There are no extra credit opportunities.

Late work: No late tests or make-up tests will be given. Students who need to miss a test for a UNC athletic team event, UNC academic field trip, or religious holiday can take the test in absentia or in advance with at least a week advance notice and written documentation. Exceptions will be made only in extreme circumstances with intervention from the Dean of Students' office. For homework, because the ALEKS scores are weighted half for objectives and half for pie completion, ALEKS topics completed before the due date will earn full credit (objective completion points and pie completion points), and topics completed after the due date will earn half-credit (pie completion points only). For ALEKS before-class assignments, no late work will be accepted.

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

In this class, all tests and exams are closed book and closed notes. All tests and exams must be completed individually, and it is an instance of cheating to give or receive help on a test or exam, except from the instructor, with the exception of warm-up tests, which may have a group component. On homework assignments and in-class problem-solving exercises, 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. 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. Typical hours are M – Th 10:00 – 6:00, F 10:00 – 3:00. See http://math.unc.edu/for-undergrads/help-center for updates and details.
- Free tutoring is available on the second floor of Dey Hall on Tues. and Wed. evenings from 6 – 9 pm.
- The Learning Center has a math coach who can give tips on how to study for and succeed in a math class.
- The Math Department keeps a list of paid tutors in the main office in Phillips 329 and on the Math Department website.
- Copies of final exams from previous years are available at http://math.unc.edu/undergraduate/old-exams/

Study Suggestions: Some Guidelines to help with success in this course.

- Read the text for the section we will be covering before class and study your notes after class.
- Watch all videos and complete all the pre-class assignments.
- Start the assignments within 24 hours after we begin a section in class and treat each attempt like it is your only attempt.
- Try to avoid using your calculator unless a question says, "answer to the nearest …".
- Be a good problem solver. Draw pictures when applicable.
- If you are having difficulty with a question, reference your notes and textbook.
- Seek help when you do not understand a concept.
- Before each test, be sure that you understand and can work all problem types homework list without any assistance.
- Always remember that it is important to *Communicate Mathematically* when working problems or writing for a test or the final exam. Write in a mathematical fashion using numbers, variables, symbols, and words to clearly express your solution to a problem. A solution to a problem includes not only the answer(s) clearly indicted, but also the logical progression of steps to achieve the answer(s). When applicable, clearly label all sketches, graphs, and/or charts.

- View all assignment keys. Carefully review all graded materials and rework problems that were not completed correctly as soon as the key is available. This will help you avoid making similar errors in the future.

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

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TENTATIVE SCHEDULE OF INSTRUCTION

Week	Dates	Sections of textbook	Topics
1	1/9	1.3	Introduction, functions
	1/11	1.7	Function domains, function properties
2	1/14	1.6	Function properties, library of functions, graphing functions
	1/16	1.7	Piecewise-defined functions
	1/18	3.1	One-to-one functions, invergses
3	*1/21*	*No class*	
	1/23	4.1	Angles and their measures
	1/25	4.3	Right triangle trigonometry
4	1/28	4.2	Trig functions – unit circle approach
	1/30	4.2	Trig functions – unit circle approach
	2/1	4.4	Properties of trig functions
5	2/4	Review	
	2/6	**TEST 1**	
	2/8		Project
6	2/11	4.5	Graphs of sine and cosine, phase shift
	2/13	4.6	Graphs of tangent, cotangent, secant, cosecant, phase shift
	2/15	4.7	Inverse sine, cosine, and tangent functions
7	2/18	4.7	Inverse sine, cosine, and tangent functions
	2/20	5.5	Trig equations
	2/22	5.5	Trig equations
8	2/25	5.1	Trig identities
	2/27	5.2	Sum and difference formulas
	3/1	5.3	Double angle and half angle formulas
9	3/4	Review	
	3/6	**TEST 2**	
	3/8		Project
		Spring Break	
10	3/18	6.1	Right angle trig, applications
	3/20	6.2	Law of sines
	3/22	6.3	Law of cosines, area of triangles
11	3/25	10.3	Conics, parabola
	3/27	10.3	Parabola
	3/29	10.1	Ellipse
12	4/1	10.1	Ellipse
	4/3	10.2	Hyperbola
	4/5	10.2	Hyperbola
13	4/8	Review	
	4/10	**TEST 3**	
	4/12	7.1	Polar coordinates
14	4/15	7.2	Polar equations and graphs
	4/17	10.6	Plane curves and parametric equations
	4/19	*No class*	
15	4/22	1.1	Difference quotient
	4/24		Review
	4/26		Review
16	5/2	**FINAL**	**Thursday, May 2 from 4:00 – 7:00 pm**

Assignment due dates will be posted on ALEKS. Objectives will be due at midnight. Before class assignments will be due at the start of class on the day that the topic is first covered in class.