MAC 1114 – TRIGONOMETRY (3 cr.) – Summer 2012
Section 27390: meets M/W 5:30 – 7:35 p.m. in Social Sciences Room 128

Professor: Brooke Quinlan
Email: bquinlan@hccfl.edu
Office: DSSC 220
Office Phone: 259-6313
My Website: [http://www.hccfl.edu/faculty-info/brooke-quinlan.aspx](http://www.hccfl.edu/faculty-info/brooke-quinlan.aspx)

**TEXTBOOK & MATERIALS:**
Also, you will need the class notes. You can download and print these from: [http://www.hccfl.edu/faculty-info/brooke-quinlan/mac-1114.aspx](http://www.hccfl.edu/faculty-info/brooke-quinlan/mac-1114.aspx)
OR you can buy the note packet in the bookstore for about $5.00.

**SOFTWARE:**
MathXL homework is required for this course. The bookstore has copies of the textbook that have MathXL packaged with them. Or, you can buy a 12-month license for $50.00 at [www.mathxl.com](http://www.mathxl.com) (our bookstore also sells MathXL Access Codes). However, if you used MathXL in a previous class, it is possible that the license will last through the end of this course, so you need to contact MathXL’s technical support at 1-800-677-6337 to see if your license lasts until at least July 23, 2012.

The MathXL course ID for this course is: **XL0W-U1ZU-701Y-76H2**

**CALCULATOR:** A graphing calculator is strongly recommended for this course.

**PREREQUISITE:** Grade of C or better in MAC-1105 or appropriate score on the Math Placement Exam.

**GRADING:** The grading scale is the standard 10-point scale (90-100 is an A, etc.).
The final grade is computed as follows:
- Attendance Average = 2 %
- You Try Average = 3 %
- Homework Average = 15 %
- Test Average = 60 %
- Final Exam = 20 %

**My Schedule**

*Available Office Hour times are shaded and bolded.*

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SPECIAL ACCOMMODATIONS STATEMENT:
Any student whose disability falls within the American Disabilities Act (ADA) and requires accommodations should contact the Office of Services for Students with Disabilities. The office is located in the Student Service Building Room 204. You may also reach the office by phone at (813) 259-6035.

REstrictions on recording:
A student shall not make or receive any recording, including but not limited to audio and video recordings or photographs, during any class or meeting without the faculty member’s permission. Further, the student does not have permission to post class lectures on the web.

Class rules:
- Cell phones are disruptive to your learning and to my teaching. Therefore, cell phones must be turned off and put away for the duration of class. If your cell phone is out for any reason, I will confiscate it until the end of class.
- I will deduct 10 points from your next test score if you use your cell phone (for any reason) during class.
- Cheating is not permitted. Any form of academic dishonesty will result in an “F” in the course and may result in HCC disciplinary action.

Attendance:
- Attendance will be taken at every class, and you are expected to attend every class meeting. History has shown that missing a single class meeting results in a 10-20% lower score on the following test due to missing all of the material taught on that day. I will not re-teach or provide notes for material that you missed when you were absent. It is your responsibility to get notes from a classmate for any classes that you miss, so you need to make a few friends in the class.
- Attendance counts as 2% of your final grade in the course. The attendance grade is calculated by dividing the number of days you were in class by the number of days that the class met.
- You are expected to arrive on time. Late arrivals will be marked as “Tardy”, and 2 Tardy’s will equal 1 unexcused absence when calculating the attendance grade.
- If you need to leave class early, let me know before class begins. If you leave class early without informing me prior to the class starting, then I will mark you absent for that day.

“YOU TRY”:
- During most lectures, I will teach a new topic, do several exercises, and then give you a problem or two that I call a “You Try” problem. Always write the “You Try” problems on an index card. At the beginning of the semester I will give you a few index cards. These are just a starter set; you need to get some index cards of your own in order to have enough for the whole semester.
- Occasionally, I will collect the index cards containing the “You Try” problems from that day. I will grade the collected “You Try” problems based on effort. Because you are working these problems as you are learning a topic, I don’t expect them to be exactly correct. But I do expect you to put in your best effort when attempting the problems.
- Sometimes at the end of a class, I will give you a problem (or two) and tell you to bring it to the next class meeting. These count as "You Try" problems also and are fair game to be collected at the beginning of the next class, so make sure you always attempt these problems!
- At the end of the semester, the average of the collected “You Try” problems will count as 3% of your overall grade in the class.
HOMEWORK:
- The only way to learn math is by working exercises, so homework is required for the course. All homework will be completed online using MathXL software. The website for login is www.mathxl.com.
- If you do not have a computer at home, there are computer labs throughout campus that can be used for completing your homework assignments.
- MathXL homework is due by 11:59 p.m. on the dates specified on the attached schedule. There is one homework assignment for each section that we will be covering in the book, plus two review assignments.
- A 25% penalty will be applied to any questions submitted after the due date (and time) has passed.
- You can work on any homework in the course (with the 25% penalty applied) up until 3:00 on July 23rd (the start of the final exam).
- You can re-work a problem as many times as necessary in MathXL until you get the correct answer. If you attempt the same problem 3 times and get it wrong (a red “x” will appear over the problem number along the top of the window), then just hit the “Similar Exercise” button and the problem will regenerate with new values. Since you can re-work missed problems, there is really no reason to not have a perfect homework score (or at least an “A”!!)
- The two lowest homework scores will be dropped at the end of the semester.
- Homework is worth 15% of your final grade in the course. If you do not have a passing grade on the homework, you will almost certainly NOT pass the course.

TESTS:
- There will be four in-class tests, but I will use only the three highest test grades to compute your overall test average, which counts as 60% of your final grade in the class.
- There will be NO makeup tests. If you miss one test, your remaining three test scores will be used to calculate your test average. Any additionally missed tests will receive a grade of zero.
- If you know that you will miss a test you must make prior arrangements with me in order to take the test in the testing center BEFORE THE REST OF THE CLASS TAKES THE TEST.
- No tests will be administered after the class has taken a test except for extreme circumstances, such as hospitalization. If there has been an extreme circumstance that caused you to miss a test, then you need to notify me via email as soon as possible (and before the next class meeting). FYI, "My car wouldn't start" is not an extreme circumstance. There are these things called taxis you can call and they come to your house and pick you up and take you wherever you need to go! It's like magic! Also, "I had a headache", "My allergies were acting up", and "I was up all night studying and didn't hear my alarm" are not "extreme circumstances" either. You need to be an adult and show up on test days.

FINAL EXAM:
- If you take ALL 4 TESTS and the average of all 4 tests is a 90% or higher, then you do NOT have to take the final exam. ☺ (When computing this average, I will count the Test Review bonus points for each test, but I will not include bonus points from volunteering, blood donation, or movie worksheets.)
- For those of you who do have to take the final exam, it will be cumulative and is worth 20% of the final grade in the course.
- Make sure you keep all of your old tests (and write down the correct answers when I go over the tests in class), because all of the questions on the final exam are similar to the ones from the previous tests.
BONUS POINT OPPORTUNITIES:

There are four ways to get bonus points in this class, as outlined below. Any bonus points earned from options B, C, and D will be added to the sum of your test grades.

A. Test Reviews: On the bottom of the next page is a list of Test Review Problems which come from the Chapter Reviews in the textbook. Work these problems out in an orderly fashion. Number all of the problems and show all of your work for each problem. Then on the day of the test, you can hand these review problems in and I will look over them. The neatness and completeness of your work will determine the number of bonus points that will be added to your test (between 0 and 2 bonus points). Any bonus points that you earn for the Test Reviews are for that test only and are not transferable to other tests. The Test Review problems MUST be handed in on the day of the test.

B. Donating Blood: If you donate blood, I will award you 5 bonus points. As proof, you must bring in the slip of paper they give you when you donate blood that has your name on it and the date of donation. You can donate blood every 8 weeks, so if you plan to do this twice during the semester, you need to donate near the beginning of the semester so there will be time to donate again before the end of the semester. (Note: if you are eligible to donate red blood cells using the ALYX system, this counts as two blood donations so you get the entire 10 points with that one donation. If you do ALYX, make sure it is clearly noted on the paper they give you!)

C. Volunteering: If you volunteer 4 hours with a non-profit agency (such as a hospital, nursing home, animal shelter, etc.), I will award you 5 bonus points. As proof, you must bring a letter from the volunteer coordinator or someone in charge that states what you did, how long you volunteered for, the dates you volunteered on, and includes that person’s name and phone number.

You can take advantage of options B &/or C up to twice a semester for a maximum of 10 bonus points.

Thus, to get your maximum of 10 points, you can EITHER
  ① donate blood twice (5 points × 2)
  ② volunteer for 8 hours (4 hours + 4 hours = 5 points × 2)
  ③ donate blood once (5 points) + volunteer for 4 hours (5 points)

D. I have several copies of An Inconvenient Truth and Who Killed the Electric Car? on DVD. You can “check out” a copy of these DVDs from me, watch them, and fill out the worksheet about the movie (the worksheets are located on my website: http://www.hccfl.edu/faculty-info/brooke-quinlan.aspx). Each movie/worksheet is worth 2 bonus points. If you have already seen one or both movies, then you can still receive the bonus points if you can convince a friend or family member who has NOT seen the movie to watch it and fill out the non-math portion of the worksheet. You must still complete the math portion. If you watch both movies and complete the worksheets, you can get 4 total bonus points.

Bonus Point Opportunities Summary:

- 2 points for each Test Review = 8 points
- Blood donation/volunteer work points from options B and/or C = 10 points
- 2 points for each movie times 2 movies = 4 points
- TOTAL NUMBER OF BONUS POINTS AVAILABLE IN THE COURSE = 22

All bonus points get added to the “Tests” portion of your grade. No bonus points will be added to the final exam, "You Try", homework, or attendance portions of your grade. Please take advantage of these bonus point opportunities throughout the semester, and don't wait until the very end of the semester to do them.
COURSE OUTCOMES:

Upon completion of the course the student should be able to:

1. Trigonometric Functions and Inverse Trigonometric Functions
   a. Understand degree (decimal and degree, minutes, seconds) and radian measure of angles and convert between the two.
   b. Solve problems involving arc length, area of a sector of a circle, and angular velocity.
   c. Define and understand the six basic trigonometric functions with angle and real number domains (right triangle and unit circle approaches.)
   d. Know the values of the six trigonometric functions for angles which are multiples of \( \pi/6 \) (30°) and \( \pi/4 \) (45°), and \( \pi/3 \) (60°) using co-terminal angles, reference angles, and/or reference triangles.
   e. Graph the six trigonometric functions and variations of these. Find the period, amplitude, and phase shift.
   f. Define and graph the inverse trigonometric functions, specifying domain and range.
   g. Find the value of inverse trigonometric functions.
   h. Construct trigonometric functions to model periodic phenomena and solve problems involving phenomena modeled by trigonometric functions.

2. Trigonometric Identities and Conditional Equations
   a. Know and apply the following identities: reciprocal, quotient, pythagorean, double angle, half-angle, sum and difference, product-to-sum and sum-to-product.
   b. Prove trigonometric identities.
   c. Solve trigonometric equations algebraically and graphically.

3. Solutions of Triangles
   a. Solve right triangles using the Pythagorean Theorem and the appropriate trigonometric functions.
   b. Solve oblique triangles using the law of sines or the law of cosines.
   c. Find the area of any triangle using the appropriate formula.
   d. Solve applications involving triangles.

4. Polar Coordinates, Trigonometric Form of Complex Numbers, and DeMoivre’s Theorem
   a. Plot points in a polar coordinate system.
   b. Convert between polar and rectangular coordinates for points and in equations.
   c. Graph curves defined by polar equations.
   d. Plot complex numbers in the complex plane.
   e. Convert between the rectangular and polar form of a complex number.
   f. Multiply and divide complex numbers using the polar form.
   g. Find powers and roots of a complex number using DeMoivres’ Theorem.

5. Vectors
   a. Convert between the rectangular and polar (magnitude, direction) descriptions of a vector in the plane.
   b. Find the resultant of a sum of vectors algebraically and geometrically.
   c. Find the dot product of vectors.
   d. Find the angle between two vectors.
   e. Resolve a vector in the plane into horizontal and vertical components.
   f. Use vectors to model and solve problems involving velocity and force.
   g. Perform operations on vectors in three dimensions including finding the cross product of two vectors in three dimensions.

TEST REVIEW PROBLEMS

DO ONLY THE ODD-NUMBERED PROBLEMS UNLESS AN EVEN-NUMBERED PROBLEM IS SPECIFIED! These are worth up to 2 points per test. You MUST show work to get any credit.

Test 1: Ch. 7 review, p. 594-596: #9-11, 21-25, 33-39, 47, 59, 73-77, 89, 91, 95

Test 2: Ch. 8 review, p. 665-666: #1-13, 23-27, 33-35 (you don't need to find domain and range), 41-65, 73-83, 91-95.

Test 3: Ch. 8 review, p. 666: #97-117. Ch. 9 review, p. 707-709: #1-41.

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<th>Lecture</th>
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★ Last day to withdraw without a grade: Monday, June 25 ★