MAC 1147 – Pre-Calculus & Trigonometry (5 cr.) – Fall 2013

Section 46423: M-R 2:00 – 3:15 in DSSC 128

Professor: Brooke Quinlan **Email:** bquinlan@hccfl.edu
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Instructor Website: http://www.hccfl.edu/faculty-info/brooke-quinlan.aspx
MyHCC: https://hccfl.blackboard.com (for class notes, grades, etc.)

COURSE DESCRIPTION: This is an accelerated course covering the topics of both MAC 1140 and MAC 1114. Students should already have some prior knowledge of trigonometry. Major topics include polynomial, rational and other algebraic functions; polynomial and rational inequalities; exponential and logarithmic functions; trigonometric functions; inverse trigonometric functions; trigonometric identities; trigonometric equations; solutions of triangles; polar coordinates; trigonometric forms of complex numbers; vectors; conic sections; systems of equations; matrices and determinants; sequences and series; binomial theorem; applications.

PREREQUISITE: MAC 1105 with a grade of "B" or better, or the required score on the placement test.

COURSE MATERIALS:

Note Packet: You need to purchase the instructor's note packet from the HCC Dale Mabry Bookstore. The note packet is over 300 pages long and needs to be stored in a 3-ring binder.
You need to have these notes with you on the first day of class!
You are expected to READ the notes for the upcoming lecture PRIOR to coming to class.

MyMathLab: Access may be purchased online or in the bookstore. You will REGISTER for MyMathLab by following the instructions found under the "MyMathLab Access" link in MyHCC.
Do *not* go directly to MyMathLab's wesbite!!! You must register through MyHCC.

Textbook: The textbook (Sullivan, Michael, ***Algebra & Trigonometry, 9e***) is housed within MyMathLab, so purchase of the paper textbook is not necessary. For anyone who would prefer to have a paper version of the book, the bookstore sells an unbound 3-hole-punched version of the textbook packaged with a MyMathLab code.

Calculator: A graphing calculator is **strongly recommended** for this course. The TI-89, TI-92, HP50g, any Casio model, or any other symbolic calculator is NOT permitted on tests. I *will* check your calculator on test days! **You need to bring your calculator to class every day. *Cell phone calculators are not permitted at any time.***

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%
MyMathLab HW Average	=	15 %
Best Test Average	=	60 %
Final Exam	=	20 %

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.

My Schedule

Available Office Hour times are shaded and bolded.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
12:00 – 12:30	**Office Hours DSSC 220**	**Office Hours DSSC 220**	**Office Hours DSSC 220**	**Office Hours DSSC 220**
12:30 – 1:35	MAC 2311 - 46444 DSSC 128	MAC 2311 - 46444 DSSC 128	MAC 2311 - 46444 DSSC 128	MAC 2311 - 46444 DSSC 128
1:35 – 2:00	**Office Hours DSSC 220**	**Office Hours DSSC 220**	**Office Hours DSSC 220**	**Office Hours DSSC 220**
2:00 – 3:15	MAC 1147 - 46423 DSSC 128	MAC 1147 - 46423 DSSC 128	MAC 1147 - 46423 DSSC 128	MAC 1147 - 46423 DSSC 128
3:15 – 4:00	**Office Hours DSSC 220**	**Office Hours DSSC 220**	**Office Hours DSSC 220**	**Office Hours DSSC 220**
4:00 – 5:00	**Office Hours DSSC 220**		**Office Hours DSSC 220**	
5:00 – 7:15 p.m.	MAC 2312 - 46447 DSSC 128	***Online* Office Hour: 7:00 – 8:20**	MAC 2312 - 46447 DSSC 128	

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 from a seating chart during every class. **You are expected to attend every class meeting**. ***I will not re-teach nor 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 couple 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 without informing me prior to the start of class, then I will mark you absent for that day.**

YOU TRY:

- After I teach a new topic and do several examples, I will frequently give you a problem or two that I call a "You Try" problem. **Always write the You Try problems on an index card**. **You will need no more than 50 index cards for the entire course**.
- Any collected You Try problems will be graded based on your **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!
- 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 the MyMathLab software. Once registration is complete, you can access MyMathLab by either clicking the "MyMathLab Course Home" link in MyHCC *or* by going directly to www.mymathlab.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.
- MyMathLab 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.
- A 25% penalty will be applied to any questions submitted after the due date (and time) has passed. Your final homework average will be recorded at the start of the final exam. No homework can be completed after this time.
- **You can re-work a problem as many times as necessary in MyMathLab 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), 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 three lowest homework scores will be dropped and the average of the remaining assignments will be your homework average, which 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:

- The "Best Test Average" counts as 60% of the course grade. Your Best Test Average is calculated as follows:
    - Add together your four "best" test scores (which will already include any bonus points earned from doing the Test Review Assignments in MyMathLab).
    - To that sum, add any bonus points earned from options B, C, and D. (See page 5 for a detailed explanation of bonus point options.)
    - Divide the total sum by four. The result is your Best Test Average.
- **There will be NO makeup tests. If you miss one test, your remaining four test scores will count toward your Best 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).

FINAL EXAM:

- The "All Test Average" is calculated by averaging the grades that I have written on the tops of **all five** of your returned tests. These scores will already include any bonus points you may have earned from the MyMathLab Test Review Assignments (Bonus Point Opportunity "A" – see page 5 for explanation of bonus points).
- If the All Test Average is a 90% or higher then you do NOT have to take the final exam. (If you are exempt from the Final, then your Best Test Average will count as 80% of your grade rather than 60%.)
- 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 those from the previous tests**.

COURSE OUTCOMES:

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

1. **Polynomial, Rational, and other Algebraic Functions**
   a. Graph polynomial functions using key features (degree, zeros, multiplicity, leading coefficient, end behavior). Emphasize function behavior as $x \to \pm\infty$.
   b. Graph rational functions using key features: vertical, horizontal and oblique asymptotes; holes, intercepts. Emphasize function behavior as $x \to$ a zero of the denominator, and as $x \to \pm\infty$.
   c. Find the real and complex zeros of a polynomial function.
   d. Solve inequalities involving polynomial and rational functions.
   e. Apply mathematical models involving polynomial and rational functions.

2. **Exponential and Logarithmic Functions**
   a. Evaluate and graph exponential and logarithmic functions.
   b. Solve exponential and logarithmic equations algebraically and graphically.
   c. Construct and apply mathematical models involving exponential and logarithmic functions.

3. **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.

4. **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.

5. **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.

6. **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' Therorem.

7. **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.

8. **Conic Sections**
   a. Define circle, parabola, ellipse, and hyperbola; recognize their equations, their properties, and sketch their graphs.
   b. Solve applications involving conic sections.

BONUS POINT OPPORTUNITIES: There are four ways to get bonus points in this class, as outlined below.

A. Test Reviews in MyMathLab: For each test, there is a "Test Review" homework assignment in MyMathLab. Rather than counting toward your homework average, these test reviews will count as bonus points on the test. These Review assignments are due at class-time (2:00 p.m.) on each Test Day. These points are not transferrable to other tests.

- A score of 90 – 100% on the MyMathLab Test Review will earn 2 bonus points on the class test.
- A score of 80 – 89% on the MyMathLab Test Review will earn 1 bonus point on the class test.

★ **The score that I record at the top of your test will include any bonus points earned for that test's review.**

★ **It is these recorded scores that will be used when I calculate the All Test Average. (Thus, the Test Review Bonus Points can help exempt you from the final exam!)**

B. I have several copies of *An Inconvenient Truth*, *Sicko*, and *Who Killed the Electric Car?* on DVD. You can "check out" a copy of any two of these DVDs from me, watch them, and fill out the worksheet about the movie (the worksheets are located in MyHCC – the link is in the left-hand navigation menu). Each movie/worksheet is worth 2 bonus points. If you have already seen a movie, 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.

You can watch **two** **of the three movies** for a total of **4** bonus points.

YOU CAN RECEIVE A MAXIMUM OF 10 BONUS POINTS FROM THE NEXT TWO OPTIONS (C AND D):

C. Donating Blood: If you donate whole blood (a regular blood donation), 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!*)

D. 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.

In summary, to earn the maximum of 10 points, you can do any ONE of these four options:

Donate whole blood twice (5 points × 2)	Donate red blood cells using ALYX once (10 points)
Volunteer for 8 hours (4 hours + 4 hours = 5 points × 2)	Donate whole blood once (5 points) + volunteer for 4 hours (5 points)

★ **Any bonus points earned from options B, C, and D will *not* affect the All Test Average. Therefore, they will NOT affect whether you are exempt from the final exam or not.**

★ **Any bonus points earned from options B, C, and D contribute to the Best Test Average *only*.**

★ **Once I throw out your lowest test, I will add your four best test scores PLUS any bonus points earned from options B, C, and D then divide that sum by 4. This number will be your Best Test Average and will count as 60% of your course grade (80% of your course grade if you are exempt from the Final Exam).**

★ **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.**

★Last Day to Withdraw: Saturday, October 26th★

MAC 1147 — Fall 2013
TENTATIVE SCHEDULE *(subject to change)*

Date		Lecture	Assignment Due	Date		Lecture	Assignment Due
—	—	—	—	*Sun*	*10/13*	—	HW 8.5, 8.6, 8.7, 9.1
M	8/19	Orientation, 5.1	—	M	10/14	9.2	—
T	8/20	5.1	—	T	10/15	9.3	—
W	8/21	5.2	—	W	10/16	9.4	—
R	8/22	5.3	—	R	10/17	Review	—
Sun	*8/25*	—	—	*Sun*	*10/20*	—	HW 9.2, 9.3, 9.4
M	8/26	5.4	—	M	10/21	**TEST 3 (Ch. 8-9)**	Test 3 Review (2:00)
T	8/27	5.5	—	T	10/22	10.1	—
W	8/28	5.6	—	W	10/23	10.2	—
R	8/29	6.3	HW 5.1, 5.2, 5.3	R	10/24	10.3	—
Sun	*9/1*	—	—	*Sun*	*10/27*	—	HW 10.1, 10.2, 10.3
M	9/2	***No Class: Labor Day***	HW 5.4, 5.5, 5.6, 6.3	M	10/28	10.4	—
T	9/3	6.4, 6.5	—	T	10/29	10.5, Cross	—
W	9/4	6.5, 6.6	—	W	10/30	CP's, 11.1	—
R	9/5	6.6, 6.7	—	R	10/31	11.2	—
Sun	*9/8*	—	HW 6.4, 6.5, 6.6	*Sun*	*11/3*	—	HW 10.4, 10.5, Cross Products, 11.2
M	9/9	6.7, 6.8, Review	HW 6.7, 6.8	M	11/4	2.4, 11.3	—
T	9/10	**TEST 1 (Ch. 5-6)**	Test 1 Review (2:00)	T	11/5	11.3, 11.4	—
W	9/11	7.1	—	W	11/6	11.4, Review	HW 2.4, 11.3, 11.4
R	9/12	7.2	—	R	11/7	**TEST 4 (Ch. 10-11)**	Test 4 Review (2:00)
Sun	*9/15*	—	HW 7.1, 7.2	*Sun*	*11/10*	—	
M	9/16	7.3	—	M	11/11	***No Class***	***Veterans Day***
T	9/17	7.4	—	T	11/12	12.1	—
W	9/18	7.5	—	W	11/13	12.1, 12.2	—
R	9/19	7.6	—	R	11/14	12.3, 12.5	—
Sun	*9/22*	—	HW 7.3, 7.4, 7.5	*Sun*	*11/17*	—	HW 12.1, 12.2, 12.3
M	9/23	7.6, 7.7	—	M	11/18	12.5	—
T	9/24	7.7, 7.8	—	T	11/19	12.6	—
W	9/25	7.8, Review	—	W	11/20	13.1	—
R	9/26	8.1	—	R	11/21	13.2, 13.3	—
Sun	*9/29*	—	HW 7.6, 7.7, 7.8	*Sun*	*11/24*	—	HW 12.5, 12.6, 13.1, 13.2
M	9/30	**TEST 2 (Ch. 7)**	Test 2 Review (2:00)	M	11/25	13.3, 13.5	—
T	10/1	8.2, 8.3	—	T	11/26	13.5, Review	HW 13.3, 13.5
W	10/2	8.3	—	W	11/27	**TEST 5 (Ch. 12-13)**	Test 5 Review (2:00)
R	10/3	8.4	—	R	11/28	***No Class***	***Thanksgiving Day***
Sun	*10/6*	—	HW 8.1, 8.2, 8.3, 8.4	*Sun*	*12/1*	—	—
M	10/7	8.5	—	M	12/2	Review for Final	—
T	10/8	8.5, 8.6	—	T	12/3	**FINAL EXAM**	**2:00 – 3:50**
W	10/9	8.6, 8.7	—	—	—	—	—
R	10/10	9.1, 9.2	—	—	—	—	—