MAC 2311 – Calculus 1 (5 cr.) – Fall 2012
Section 32449: M-R 12:30 – 1:35 in DSSC 128

Instructor: Brooke Quinlan
Email: bquinlan@hccfl.edu
Office: DSSC 220
Office Phone: 259-6313
Instructor Website: http://www.hccfl.edu/faculty-info/brooke-quinlan.aspx
MyHCC: https://hccfl.blackboard.com/webapps/login/ (for class notes, lecture videos, grades, etc.)

COURSE DESCRIPTION:
This is the first of a three-course sequence in calculus. Major topics include limits, continuity, and differentiation and integration of algebraic, trigonometric, exponential and logarithmic functions. Applications include rates of change, related rates, mean value theorem, extreme values, curve sketching, differentials, area, volume and work. This course is intended for students who plan to pursue studies in life science fields such as (but not limited to) biology, microbiology, marine science, pre-medical, pre-pharmacy, pre-veterinary, or pre-dentistry.

PREREQUISITE:
MAC 1114 and MAC 1140, or MAC 1147, with a grade of “C” or better, or the required score on the HCC placement test.

TEXTBOOK:

NOTE PACKETS:
There are two packets of notes required for this course:
- The first note packet is for the Algebra & Trig Review. These notes can be downloaded and printed from the Class Files folder in MyHCC, or you can purchase them for about $1.00 in the campus bookstore. **You need to have these notes with you on the first day of class!**
- The second note packet, for the Calculus portion of the course, is 115 pages long (not ideal for self-printing!) and is available for purchase in the bookstore. You will need these notes for the beginning of the second week of class.
  - The Calculus note packet is also available in the Class Files folder in MyHCC. You should right-click on this file and save it to your computer because it is very large and would be time-consuming to download each time you want to access it.
  - **The downloadable version of these notes has every example worked out in videos that are posted online. Access the videos by clicking the example name or number.**

CALCULATOR:
A graphing calculator is **strongly recommended** for this course. The TI-89, TI-92, HP50g, or any other calculator capable of symbolic differentiation or integration 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 allowed at any time.**

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 (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 December 5, 2012.

The MathXL course ID for this course is: **XL0X-C11Y-501Y-2UI2**

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%
- MathXL 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.*

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<tr>
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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 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 some 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 class starting, 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 15-25 index cards for the 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!

- 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 [http://www.mathxl.com](http://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.

- 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 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 three lowest homework scores will be dropped.

- 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 six tests, but I will drop the lowest test.

- Your “Best Test Average” is found by adding your five highest test scores plus any bonus points earned from options B, C, and D (see page 5) and dividing that sum by five. The Best Test Average counts as 60% of the course grade.

- There will be NO makeup tests. If you miss one test, your remaining five 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). 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.
The “All Test Average” is calculated by averaging the grades that I have written on the tops of all six of your returned tests. These scores written on your tests will already include any bonus points you may have earned from the MathXL 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. ☺

Please note that bonus points from volunteering, blood donation, or movie worksheets are not included in the All Test Average. The All Test Average is based solely on your recorded test scores and is used ONLY to determine if you have to take the final exam or not. The Best Test Average (which does include bonus points from volunteering, blood donation, or movie worksheets) is what counts as 60% of your grade in the course.

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 show the use and application of mathematics in several widely diverse topics to be chosen from, but not limited to, the following:

1. **Limits and Continuity**
   a. Evaluate limits graphically, numerically, and analytically.
   b. Evaluate limits using limit theorems.
   c. Evaluate one-sided limits.
   d. Evaluate limits involving infinity.
   e. Demonstrate knowledge of the $\varepsilon - \delta$ definition of limits.
   f. Determine continuity at a point and on an interval.
   g. Apply the Intermediate Value Theorem.

2. **Derivatives**
   a. Evaluate derivatives of algebraic, exponential, logarithmic, trigonometric, and inverse trigonometric functions.
   b. Evaluate derivatives using the limit definition.
   c. Evaluate derivatives using differentiation rules including power, sum, product, quotient, and chain rules and using logarithmic differentiation.
   d. Evaluate higher order derivatives.
   e. Evaluate derivatives implicitly.
   f. Evaluate differentials $dy$ and $dx$ and demonstrate their use.
   g. Use Newton’s method to approximate zeros of a function.
   h. Apply derivatives to find the slope of a tangent line to a curve, interpret instantaneous rates of change, solve rectilinear motion problems, solve growth and decay problems, and solve related rates problems.

3. **Applications of Derivatives**
   a. Find absolute extrema on closed intervals.
   b. Demonstrate an understanding of Rolle’s Theorem and the Mean Value Theorem.
   c. Use the first derivative to determine where a function is increasing or decreasing.
   d. Find relative extrema using the 1st and 2nd derivative tests.
   e. Use the 2nd derivative to determine a function’s concavity and inflection points.
   f. Use L’Hôpital’s rule to evaluate limits of indeterminate forms.
   g. Sketch the graph of function using techniques of calculus.
   h. Solve optimization problems.

4. **Antiderivatives and the Definite Integral**
   a. Find antiderivatives involving algebraic, trigonometric, inverse trigonometric, exponential, and logarithmic functions using basic theorems and the substitution methods.
   b. Use antiderivatives to solve differential equations and rectilinear motion problems.
   c. Calculate the definite integral and area under a curve using Riemann sums.
   d. Use the properties of the definite integral when evaluating integrals.
   e. Evaluate the definite integral using the Fundamental Theorem of Calculus.

5. **Applications of the Definite Integral**
   a. Find the area of a region between two curves in a plane.
   b. Find the volume of a solid of revolution using disk, washer, and shell methods.
   c. Find the volume of a solid of known cross sections.
   d. Find the work done by a variable force along a line.
   e. Find the average value of a function using the Mean Value Theorem for integrals.
**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 contribute to your Best Test Average only.

A. Test Reviews in MathXL: For each test, there is a “Test Review” homework assignment in MathXL. Rather than counting toward your homework grade, these test reviews will count as bonus points on the test. These Review assignments are due at class-time (12:30 p.m.) on each Test Day.

- A score of 90-100% on the MathXL Test Review will earn 2 bonus points on the class test.
- A score of 80-89% on the MathXL Test Review will earn 1 bonus point on the class 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 the activity you performed, 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)
   OR
2. volunteer for 8 hours (4 hours + 4 hours = 5 points × 2)
   OR
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](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 = 12 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 = 26**

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.
### MAC 2311 – Calculus 1 - Fall 2012

**TENTATIVE SCHEDULE (subject to change)**

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<th>Date</th>
<th>Lecture</th>
<th>Assignment Due</th>
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<tr>
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<td>Sun 10/14</td>
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<tr>
<td>M 8/20</td>
<td>Orientation, AR: Topic 1 &amp; 2</td>
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<td>2.2/2.4</td>
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<td></td>
<td>T 12/4</td>
<td>No Class</td>
<td>1st Day of Finals</td>
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<td>W 10/10</td>
<td>4.2</td>
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<td>W 12/5</td>
<td>FINAL EXAM</td>
<td>12:30 – 2:20</td>
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<td>R 10/11</td>
<td>4.1</td>
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