MAC 2311 – Calculus 1 (5 cr.) – Spring 2013
Section 38255: 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 (for class notes, grades, etc.)

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**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:**
Two packets of notes are 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 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 over 100 pages long and is available for purchase in the bookstore. You will need these notes the second week of class.
  - The Calculus note packet is also available in the Class Files folder in MyHCC.
  - 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.

**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 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 May 2, 2013.

The MathXL course ID for this course is: XL12-Y1UJ-901Y-9UI2

**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.

**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 %
**My Schedule**

Available Office Hour times are shaded and bolded.

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<tr>
<th></th>
<th>MONDAY</th>
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<th>WEDNESDAY</th>
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| 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 - 38255
DSSC 128                | MAC 2311 - 38255
DSSC 128                | MAC 2311 - 38255
DSSC 128                | MAC 2311 - 38255
DSSC 128                |
| 1:35 – 2:00 | **Office Hours**
DSSC 220                  | **Office Hours**
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DSSC 220                  | **Office Hours**
DSSC 220                  |
| 2:00 – 3:15 | MAC 1147 - 38232
DSSC 128                | MAC 1147 - 38232
DSSC 128                | MAC 1147 - 38232
DSSC 128                | MAC 1147 - 38232
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                  | **Office Hours**
DSSC 220                  | **Office Hours**
DSSC 220                  |
| 5:00 – 7:15 p.m. | MAC 2313 - 38258
DSSC 128                | **Online Office Hour:** 7:00 – 8:20
DSSC 220                  | MAC 2313 - 38258
DSSC 128                |

**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 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 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!

- 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.

- 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 and the average of the remaining assignments will count as **15%** of your class grade.

- **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:

- 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 MathXL).
  - 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 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. (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 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.

A. Test Reviews in MathXL: For each test, there is a “Test Review” homework assignment in MathXL. 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 (12:30 p.m.) on each Test Day. These points are not transferrable to other tests.

- 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.

★ 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:

<table>
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<tr>
<th>Donate whole blood twice (5 points × 2)</th>
<th>Donate red blood cells using ALYX once (10 points)</th>
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<tr>
<td>Volunteer for 8 hours (4 hours + 4 hours = 5 points × 2)</td>
<td>Donate whole blood once (5 points) + volunteer for 4 hours (5 points)</td>
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★ 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 without a grade: Wednesday, March 20th

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<td>HW 4.2</td>
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