

# MAT 127 -- Calculus II Online

## Spring 2015

**Professor: D. Bradley**

### **Text:**

There is no required text. Extensive course notes with worked out problems and examples are provided in the course conference on your FirstClass desktop. For most students, this will be more than sufficient. For those that want an additional reference, there are many excellent calculus texts to choose from. In the past, the department recommended "Single Variable Calculus: Early Transcendentals" by Jon Rogawski, published by W. H. Freeman and Company, ISBN-13: 978-14292-1075-1, ISBN-10: 1-4292-1075-3. Schaum's Outline of Calculus is available for less than \$20 and is an excellent source of over 1100 solved problems. Copies of "Single Variable Calculus for Scientists and Engineers" by Briggs, Cochran and Gillet should be available at the UM bookstore on the Orono campus. If you have a different calculus text that you are comfortable with, it will probably be adequate. Contact me if you have any doubts. Since course notes and lecture videos are freely available, and there is also plenty of free material on the web, you may not need to buy a text.

### **Lectures:**

There are no formal class meetings. Lectures in streaming video format as well as lecture notes are provided in the course conference on your FirstClass desktop. You can access the material at your convenience. There are no scheduled times when you must online.

### **Grades:**

The breakdown will be as follows:

- **Assignments:** 40%
- **Midterm Test:** 30%
- **Final Exam:** 30%

### **Help:**

For technical assistance with issues concerning MaineStreet, FirstClass, or video problems contact either

- the CED Tech Help staff in (main floor) Room 122 [Chadbourne Hall](#) on the UMaine campus in Orono. email: [cedtechhelp@umit.maine.edu](mailto:cedtechhelp@umit.maine.edu) ("CED Tech Help" on FirstClass) toll-free phone: 1-877-947-4357 phone: 207-581-4591 (1-4591 on the UMaine campus in Orono).

- or the [IT Help Center](#) in (basement) Room 17 [Shibles Hall](#) on the UMaine campus in Orono. email: [help.center@umit.maine.edu](mailto:help.center@umit.maine.edu) ("Help Center" on FirstClass) phone: 207-581-2506 (1-2506 on the UMaine campus in Orono). Facebook: <https://www.facebook.com/UMaine.IT>

For help with the course material, email is the best way to reach me. For simple math questions, there's also the Math Lab, located in 110 [Neville Hall](#) and staffed weekdays throughout the semester.

## Assignments:

Once the course gets underway, you should be able to access homework assignments at the URL <http://WebWorK.umemat.maine.edu/webwork2/MAT127-Bradley/>. Typically, your username will be your last name (all small letters) and your password will be your 7-digit MaineStreet student ID number used for course registration. (Not your FirstClass password, nor the password that you use to log into MaineStreet.)

To find out what your MaineStreet Student ID number is, visit the [Maine Street portal](#). Once you are logged in, use the following navigation to find your Student ID Number:

Go to Student Self-Service -> Student Center.

Once in Student Center, go to the "Demographic Data" link under the Personal Information bar.

The ID is the first thing listed once you click the Demographic link.

If you have trouble logging in to WebWorK there are usually two reasons: either someone else registered in the course shares your last name, in which case try appending the number 1 or 2 or higher to your username; or you registered for the course after the first official day of class, in which case alert me of your registration by email and I will set up your account.

After successfully logging into WebWorK, you should see a list of problem sets with due dates. Clicking on a problem set will reveal a list of problems. You have the option of downloading and printing a hard copy of the list so that you can work the problems off-line. You can do this using WebWorK's download button, or by printing problems individually using your web browser's print feature. When you're ready to enter your answers, just click on each problem, enter the answer(s) in the box(es), click "Preview Answers" at the bottom of the page to check that WebWorK is interpreting your answers as you intended, and if that's the case then click "Check Answers". If your answer is correct, WebWorK will state this in green, and you will receive credit for the problem. If your answer is incorrect, WebWorK will state this in red, and you will be given an opportunity to try the problem again. You can click the "Email instructor" button to send me feedback if there is a particular problem that you're having difficulty with. In fact, this is the best way to contact me concerning specific WebWorK problems, because WebWorK sends me additional information about the problem automatically when you use this feature.

## Midterm Test and Final Exam:

- **UMaine Students:** These will be held on the UMaine campus in Orono.

- Date, time and location for the Midterm: Details will be announced at least a week in advance. Look for information in the course conference on your FirstClass desktop.
  - Tentative date, time and location for the Final: Details will be posted in the course conference on your FirstClass desktop at least a week in advance, but you can expect the final exam to be held sometime the week of Monday May 4 through Friday May 8 (Final Exam Week). Since the final exam schedule is subject to change by the University, do not make travel plans to leave town until the end of Final Exam Week.
- **University College Students:** You'll want to [sign up for a test site](#) during the first few weeks of the semester in order to ensure that copies of the midterm test and final exam are available for proctoring at a convenient location. It is also your responsibility to contact the site in advance to arrange a specific day and time to take the test/exam.
  - **High School Students:** Arrange with your guidance office for proctoring of your midterm test and final exam.
  - **Out of State Students:** Please provide the name of a suitable proctor in your community, preferably a public school, university or college professional, or librarian to University College Learning Services. They'll need your proctor's contact information so they can forward a copy of the test/exam to him/her. To set this up with University College Learning Services, email them at [ucls@maine.edu](mailto:ucls@maine.edu) or phone 1-800-696-1124 ext. 3377 (within Maine), (207) 621-3377 (out-of-state), 1-800-696-1125 (fax).

## Topics:

- Definition and Properties of the Integral
  - Area under a Curve
  - Riemann Sums
  - The Definite Integral
  - The Fundamental Theorem of Calculus
  - Antidifferentiation
- Integration Techniques
  - Substitution
  - Integration by Parts
  - Partial Fractions
  - Tables of Integrals
  - Improper Integrals
- Applications of Integration
- Differential Equations
  - Modeling with Differential Equations
  - Direction Fields
  - Separable Differential Equations
  - Exponential Growth and Decay
  - The Logistic Equation
- Infinite Sequences & Series
  - Geometric and Monotonic Sequences
  - Geometric, Harmonic and Alternating Series

- Area Between Curves, Volumes
- Arc Length, Surface Area
- Average Value of a Function
- Motion, Work, Pressure, Force
- Probability

- Conditional and Absolute Convergence
- Convergence Tests - Root, Ratio, Integral & Comparison
- Taylor Series, Binomial Series
- Interval and Radius of Convergence
- Using Series to Evaluate Integrals
- Using Series to Solve Differential Equations