

Calculus II (MTH 176) Fall 2013 Phillip L. Sanderson

Course Description (RCC MTH 176):

To begin this second semester of Calculus, students will estimate the area under a curve using Riemann sums and then learn techniques of antidifferentiation to determine exact area under a curve. As in a traditional calculus course, students will then learn to take both derivatives and integrals of transcendental functions. Students will learn to solve basic differential equations, including separable differential equations. Finally, a special emphasis will be placed on applications of integrals.

Text:

<u>Calculus of a Single Variable, 8th Ed.</u>; Larson, Hostetler, and Edwards: Houghton Mifflin; 2006 *Please cover this text and keep it covered throughout the year!*

Course Credit: 3 credits

Contact Information:

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I am available at CBGS from 7:30 AM to 3:00 PM by phone or email and at the home or cell number after school.

Required Materials: One large 3-ring binder, a large block eraser, and a graphing calculator. (I will be using one of the TI-83 graphing calculators in class. You are welcome to use a different model, but I will be able to provide only limited assistance.) Graph paper and colored pencils may be useful.

Attendance: Class attendance is, of course, required. Be reminded of the CBGS policy in the *Handbook* which you signed. Absences and tardies will be reported daily to your home school and to parents on interims and grade reports. Check for assignments you may miss by accessing the web site (www.cbgs.k12.va.us, Courses link, Glenns site link, and Calculus link). You may also email or call me for assistance.

Make-up work policy: I will not be using class time to remind you of any work that you have missed—our time together is too brief. That will be your responsibility and yours alone. Work that is severely late will be penalized and work that is still missing at the end of the grading period will be a zero.

Honor Code: Students are expected to follow the rules and procedures as outlined in the Student Honor Code. Please refer to the Student Handbook if you need guidelines. Failure to do so may result in dismissal from the course. Tests, quizzes, and other work as requested will be pledged.

Course Objectives

Calculus II Math 176

Students will demonstrate the ability to:

- 1. Find the antiderivatives and indefinite integral of algebraic, exponential, and trigonometric functions;
- 2. Use Riemann Sums and definite integral to find areas;
- 3. Know and apply the Fundamental Theorem of Calculus.
- 4. Find antiderivatives using a variety of techniques including substitution, tables, integration by parts and partial fractions;
- 5. Approximate definite integrals using numerical techniques, such as the trapezoid rule, Simpson's method, and calculator/computer programs;
- 6. Apply integration techniques to solve problems involving areas, volumes, arc length, and differential equations;

Learning Sequence:

- 4: Integration
 - Estimating area under a curve
 - Riemann sums
 - Definite integrals
 - Antiderivatives and indefinite integrals
 - The Fundamental Theorem of Calculus (I)
 - The Fundamental Theorem of Calculus (II)
 - Integration by substitution
 - Numerical integration
- 5: Logarithmic, Exponential, and
 - Other Transcendental Functions
 - Natural logarithmic function
 - Differentiation
 - \circ Integration
 - Inverse functions

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- Exponential functions
 - Differentiation
 - Integration
- Bases other than *e* and their applications
- Inverse trigonometric functions
 - Differentiation
 - Integration

- 6: Differential Equations
 - Slope fields and Euler's method
 - Differential equations
 - Growth and decay problems
- 7: Application of Integration
 - (w/ Differential Equations)
 - Determining the area between two curves
 - Volume
 - Disk method
 - Shell method
 - Arc length
 - Area of a surface of revolution
 - Work

Emergency Evacuation Plan: In each classroom, laboratory or other places where students are assembled for the purpose of instruction, a fire evacuation plan will be posted indicating the direction of travel from the room in the event it becomes necessary to evacuate the building as a result of fire or other emergency. This plan will be posted in a conspicuous place near the exit from the room.

Whenever the fire alarm sounds, the building will be evacuated. The instructor will ensure the fire door is closed upon leaving the area (doors with automatic closures on them). Instructors are also responsible for assisting disabled students.

If a classroom does not have an evacuation plan posted, the student or instructor should notify the academic dean.

Course Expectations and Information:

- 1. **Be Prepared:** Regardless of whether homework is graded or not, it will be essential to your *survival* in Calculus class. Promise. No siestas, no holidays. If you fall behind, you will have to work at least twice as hard to catch up. <u>Always</u> do homework, <u>always</u> take notes, <u>always</u> ask questions, <u>always</u> be prepared.
- 2. **Class Participation:** You MUST ask questions about concepts that you feel need better clarification. Do not worry about anyone's reaction, ask. Be engaged from the beginning and stay that way. Remember, I do not start actually teaching until you start asking questions. Until that point, I might as well be working from a script.
- 3. Notebook: As mentioned earlier, you will want two 3-ring binders. All materials I give you (quizzes, tests, worksheets, handouts, ...) will be three-hole punched and need to be kept in your binders. BE ORGANIZED. Very few sloppy students can be successful calculus students. Many of you find that if you are physically disorganized, you will also be mentally disorganized...not good for calculus.

- 4. Homework and Assessments: Homework will be assigned on a nearly daily basis—except for the days of a test, you will almost ALWAYS have homework to complete. The following class I will take as many questions on the attempted homework as time permits. However, I will not grade the homework. On the other hand, each major assessment will have between 30-50% of the questions come directly from the homework sets. The questions reviewed in class will have no bearing on those I choose for the assessments. Often I allow students to complete test corrections for partial credit. Problems from homework are <u>not</u> eligible for test corrections. [A hint: if a test review or quiz assesses a concept from a numeric standpoint, look for the tests to come at the same concept from a different angle (graphical, analytic, or verbal).] Quizzes will be frequent and are seldom announced.
- 5. **Grading:** I use a "total points" system. Every assignment (quiz, test, classwork, homework) will be given a number of points it is worth (the sum of the points from all of the questions). Your grade will be the points you earned relative to the points the assignment was worth. To compute your average at any point in the semester, take the total points earned and divide by the total points available.
- 6. **Cell Phones:** All cell phones and other electronic devices must be silenced and are not to be used during class, unless permission is given otherwise. If used in an unauthorized manner, electronics will be confiscated and returned at the end of the class period. Repeat offenders will be referred to the CBGS director.

7. Tips on how to survive this and other college level courses:

- Do not fall behind.
- Do all homework.
- Ask questions.
- Form a study group (few people actually enjoy doing calculus alone!)
- Be organized!!
- Schedule your time and use it effectively!
- You need to be self-motivated in college!

Inclement Weather and School Closings Policy

- Closing of the Chesapeake Bay Governor's School is determined by the site (Rappahannock Comm. College-Glenns, Rappahannock Comm. College- Warsaw, or Caroline County School Board). For example: Essex County Schools may be closed due to weather but RCC-Warsaw is open; therefore CBGS will be in session.
- If a school system is closed due to inclement weather and the CBGS is open, students from the *closed* school system may attend pending the safety of the roads and permission from parents.
- There may be an emergency in which the CBGS is closed and the particular school system is open. Students shall report to their respective school instead of going to CBGS.
- If there is a one-hour delay for the CBGS site (RCC- Glenns/Warsaw and Caroline), CBGS will open one hour late.
- If there is a two-hour delay for the CBGS site, CBGS will be closed and students are to report to their home high school.
- If the home high school opens one hour late, and CBGS opens on time, students from the home high school are to report to CBGS, one hour late.
- At the Glenns site (and other sites as well) we have a phone tree to notify students directly of CBGS closings.

<u>CBGS Statement on Safety:</u>

What to know and do to be prepared for emergencies at CBGS/RCC:

- Sign up to receive RCC text messaging alerts and keep your information up-to-date <<u>https://alert.rappahannock.edu/index.php?CCheck=1</u>>
- Know the safe evacuation route from each of your classrooms. Emergency evacuation routes are posted in campus classrooms.
- Listen for and follow instructions from CBGS/RCC or other designated authorities.
- Know where to go for additional emergency information.
- Report suspicious activities and object

Statement on Americans with Disabilities Act

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 require Schools to provide an 'academic adjustment' and/or a 'reasonable accommodation' to any qualified individual with a physical or mental disability who self-identifies as having such. Students should contact/ inform CBGS faculty for appropriate academic adjustments or accommodations.