

Roanoke Valley Governor's School for Science and Technology
AP Calculus BC
Syllabus 2023-2024
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I. Course Information

a. Course Description

AP Calculus BC builds on the concepts learned in AP Calculus AB. The major themes include: advanced integration techniques, differential equations, series and approximation, parametric and polar functions presented numerically, geometrically, symbolically, and verbally as students learn to communicate the connections among these representations. Students are expected to obtain a qualifying score of 3, 4, or 5 on the AP Calculus BC exam at the end of this course.

b. Gifted Education Strategies

1. Understand the connections between various mathematical representations: graphical, numerical, analytical, and verbal.
2. Communicate mathematics both orally and in well-written sentences, including being able to explain one's solutions to problems.
3. Model a written description of a physical situation with a function, a differential equation, or an integral (problem-solving).
4. Use graphing calculators and other technology to experiment, solve problems, interpret results, and support conclusions.
5. Determine the reasonableness of solutions, including sign, size, relative accuracy, and units of measurement.
6. Develop an appreciation of calculus as a coherent body of knowledge and as a human accomplishment.

c. Text, Printed Resources

1. Larson, Hostetler, Edwards. Calculus, Seventh Edition. Houghton-Mifflin, Boston, 2002.

II. Grading Policy

a. Grading Scale

100-90%	A
89-80%	B
79-70%	C
69-60%	D
59-0%	F

b. Types of Evaluations

- i. Tests:** Tests will be administered after several integrated competencies have been mastered. These tests are designed to help the students learn to think about the broad connections between topics as well as to reinforce previous topics. Please note: All Tests are cumulative and consist of both calculator and non-calculator portions.

- ii. **Quizzes:** Quizzes will be given to test for connections between objectives. You will find a list of competencies and enabling objectives on-line that you are expected to master in this course.
- iii. **Labs and Projects:** A lab is a problem or set of exercises designed to make use of current technology and/or ideologies requiring the use of higher order thinking skills. It will require a word processed formal written or oral report describing findings and conclusions. Details regarding lab reports will be explained for individual labs (not included in this syllabus). Labs are designed to be completed independently or in groups based upon instructions. Groups will be assigned at teacher discretion. These labs may involve mathematical modeling, data collecting, statistical analysis, and the use of computer software and/or graphing calculators. Often, projects assigned will enhance your understanding of the integration of mathematics into other disciplines. Since many lab and project assignments will require you to work in a cooperative learning environment, your participation or lack thereof directly affects your learning experience as well as the other members of your group. You are expected to follow the description in the Student Handbook for working in cooperative learning groups. Cooperative learning and group assignments are based on the honor of the group as well as the honor of the individual. By signing your name to a group assignment, you are attesting that everyone in your group has served productively toward the completion of the assignment. Each student is responsible for the content and concepts studied in the lab and must be prepared to present or discuss any part of the lab. This is true for any activity involving group work; not just labs. Cooperative learning and group assignments are expected to be treated as such. Each member of a group is expected to contribute productively within that group. Assigning each person in the group a certain number of questions, problems, or activities, then compiling those activities to turn in is unacceptable and will result in zero credit. Students may also be asked to complete self- and peer-evaluation forms at the conclusion of the activity. These forms will be counted as part of the grade for the activity. If an absence for any reason causes you to be unable to fulfill your role in the group, you are expected to do the entire activity independently. By signing your name to a group assignment, you are attesting that everyone in the group has served productively toward the completion of the assignment.
- iv. **Homework:** Homework is an integral part of this course and it is extremely important that it be completed on time. You are expected to check answers in the back of the book before coming to class (when applicable) and/or use any other means offered by your teacher to check homework. You should make notes of specific questions/problems you would like to review. Homework will be checked on a regular basis by various methods, including, but not limited to, asking you to exhibit proof that you worked on the assignment, asking you to write down your solution and work on an assigned problem and turning it in (grading will

reward effort toward completion rather than correctness of final result), or asking you to take a quiz on previously completed homework assignments (grading will reward correctness of final result). All assignments are due at the beginning of class. Homework is graded for completeness, corrections, and timeliness. Homework will not be accepted late, unless a student is absent, in which case it is due upon the student's return. Homework will be checked for various combinations of completion, effort, and accuracy. You will be informed which grading method(s) will pertain to a particular assignment. Complete your homework using a pencil and show all work to support your answers. Your work should be well organized, neat, and easy to read. If I cannot read your handwriting, you will be asked to re-write the assignment. Use graph paper if applicable. Expectations regarding acceptable graphs will be discussed in class. Start each assignment on a clean sheet of paper labeled with your name, the date, the correct page number(s), and the problem number(s). No late credit is given on homework.

- v. **Semester Exam:** At the end of each semester, a comprehensive, cumulative exam will be given on scheduled exam days. These exams will cover all material covered during the semester and will consist of both calculator and non-calculator portions, multiple choice and free-response.

c. Semester Grade Determination

Category	Weight
Semester Exam	15%
Tests	40%
Quizzes	20%
Labs/Projects	15%
Homework/Classwork	10%

d. Final Grade Determination

The final grade is the average of the 2 semester grades. Students who fail to maintain a B average or above will be subject to the RVGS probationary policy.

III. Class Policies and Procedures

- a. **Absences and Tardies:** The policy in the RVGS student handbook will be followed.
- b. **Make-up Work:** If you are absent or tardy to my class, you are expected to bring a note from your parents upon your return to school. Doctor's notes or forms of any kind, school permission slips, notes from home school teachers, etc. are not acceptable.
 - i. You must have a parent note for early release from school for any reason (i.e., doctor appointments, athletic events, etc.)
 - ii. Pre-planned absences or late arrivals should be excused by a note from a parent or guardian prior to the absence, as per school policy.

1. Any assignment missed due to any type of excused absence may be made up. You will not be given credit for make-up work without a note.
 2. It is the student's responsibility to approach the teacher to find out about missed work and to arrange a suitable time to make it up.
 3. If you know you are going to be absent, you are responsible for getting the assignments ahead of time and submit them the day you return.
 4. If the absence is unplanned, you are expected to make up the work within a week of the absence.
 5. If you are absent the day prior to an assessment of any kind (i.e. quiz, test, exam), including review days, you will be expected to take the assessment on the scheduled day, unless you have prior approval from the teacher.
- c. Late-work Policy:** Late assignments will lose 25% credit for each day late and no assignments will be accepted more than four days late (with the exception of homework assignments, which will not be accepted late unless due to absence). Each day you are at school counts as one day, even if you do not have my class that day. In other words, if you wait until you are in my class again, you will lose credit for each school day that has passed since the assignment was due, not for each day of my class that has passed.
- d. Cheating:** The policy in the RVGS student handbook will be followed. All work completed in class for individual evaluation will be based on the premise that you have neither given nor received help. When you sign your name on your papers, you are agreeing to this premise.
- e. Technology Policy:** The RCPS Acceptable Use Policy and the RVGS student handbook policy will be followed.
- f. Cell Phone Policy:** The policy in the RVGS student handbook for cell phones and electronics will be followed. If parents need to contact a student during class, they should call the front office.
- g. Extra Help:** It is inevitable that there will be times when you may not grasp a concept the first time. Extra help is always available, but it is up to you to seek help as soon as possible..
- h. Student Performance Strategy:** Interventions will be implemented at the teacher's discretion or in the event that the student's grade falls below an 80.
- i. SEC Notification:** Per Virginia Code (§ 22.1-16.8), parents must be aware of the use of any instructional materials with explicit content. No explicit materials are used in this course.
- j. General Classroom Procedures:**
- i. Please take care of sharpening your pencil, using the restroom, buying snacks, and getting drinks prior to the beginning of class. None of these are acceptable reasons for being late to class. Neither is it acceptable to come to class, check in, and then leave to go to the snack or drink machines.

- ii. Please respect the teacher or other students by not interrupting class to use the restroom; instead, wait until the lesson is over or a good stopping point is reached, then you may leave to go to the restroom.
- iii. The rules of common courtesy will be observed in the classroom at all times. When the teacher is speaking, students should be attentive and listening. Likewise, if one of your fellow students is speaking, you should provide them with the same courtesy and respect that you expect to receive.
- iv. All written work should be done on standard 8½” x 11” white notebook paper or graph paper as appropriate. Please do not turn in work written on legal sized sheets of paper or on colored paper, unless you receive permission from the teacher. Documents that must be word-processed should be printed on white or off-white paper only.
- v. Bring your calculator to class every day although we may not use it every day. Always keep your calculator in good working condition.
- vi. Students are expected to meet all deadlines and make proper use of class time. Furthermore, students are expected to arrive on time to class and be prepared to begin class when the tone sounds. Students are expected to not disrupt or to cause issues that take away from the quality of the class. Students are expected to be engaged at all times in material that is directly related to AP Calculus BC. Using class time to work on anything unrelated to this course is not acceptable. One ten-minute break during lab days will be at the discretion of the teacher.
- vii. If at any point during the school year, your grades fall below 80%, or your performance level seems to decrease significantly, your instructor will have a conference with you to develop a “plan for improvement” and parents will be notified. All conferences will be documented. If necessary, further steps for improvement will be taken and your parents will be involved per school policy.
- viii. I will use school e-mail and Remind to communicate with you (do not request that I use a different email address for you - if your school email is not functioning, please let me know). It is imperative that you check your school e-mail, course calendar and Canvas daily for information or modifications to any assignment or any other announcements pertinent to this class.
- ix. Students are expected to “Strive for a 5” on the AP Calculus BC Exam. Due to your excellent performance on the AB exam, all members of this class have the potential to earn a 5. Those who work hard and learn the material should achieve this goal. AP practice will occur throughout the year and it will be our class goal to allow two weeks before the AP Exam to devote exclusively to review; however, this may change due to issues beyond our control (i.e. snow days, etc.). During this two week period, students will work on multiple-choice and free response questions from AP Released Exams as in-class assignments, homework assignments, quizzes, and tests; as well as problems from the AP Review Packets.

- x. Organization and communication are major keys to success. Most information on quizzes and tests will be taken from the homework assignments, class notes and activities. You can expect questions on quizzes and tests to assess your ability to synthesize the material in class and not just a regurgitation of information. You must maintain an organized 3-ring binder devoted solely to this class. Use this binder to store your daily notes, homework assignments, handouts, quizzes, tests, and other class-related materials. Students may collaborate on any homework or class assignment unless otherwise specified.