**Roanoke Valley Governor’s School for Science and Technology  
AP Calculus AB  
Syllabus 2023-2024  
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1. **Course Information**
   1. **Course Description**

AP Calculus AB emphasizes a multi-representational approach to college level calculus with concepts, results, and problems expressed graphically, analytically, numerically, and verbally. Topics include limits, derivatives and their applications, integration techniques, differential equations and modeling, approximation techniques, area and volume. Students are expected to obtain a qualifying score of 3, 4, or 5 on the AP Calculus AB exam at the end of this course.

It is important to note that Calculus, by its very nature, is an inherently difficult course for many high school students. For the first time, students will be introduced to advanced, abstract mathematical concepts that will require critical thinking on a level not seen before. This will be a journey in which we will travel together – but like any journey, to overcome the bumps, you will have to be resilient, grow, and be willing to give it everything you got!

* 1. **Gifted education strategies**
  2. **Understand the connections** between various mathematical representations: graphical, numerical, analytical, and verbal.
  3. **Communicate** mathematics both orally and in well-written sentences, including being able to explain one’s solutions to problems.
  4. **Model** a written description of a physical situation with a function, a differential equation, or an integral (problem-solving).
  5. Use **technology** to help solve problems, experiment, interpret results, and verify conjectures.
  6. Determine the **reasonableness** of solutions, including sign, size, relative accuracy, and units of measurement.
  7. Develop an **appreciation** of calculus as a coherent body of knowledge and as a human accomplishment.
  8. **Text, Printed Resources, and Media Resources**

1. Hass, Joel, Maurice D. Weir, and George B. Thomas, Jr. *University Calculus Early Transcendentals*. 3rd ed. United States: Pearson, 2016.

2. TI-84+, TI-89, TInSpire Calculators and Guidebooks

3. Microsoft Office, MathType, Python 3

**\*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

1. **Grading Policy**
   1. **Grading Scale**

The standard grading scale will be used in this course (90’s – A, 80’s – B, etc.). This is a college-level mathematics course and the grading will be strict. You should utilize any and all evaluation opportunities to your advantage. **Extra credit will NOT be given in this class, period.**

* 1. **Types of Evaluations**
     1. **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.
     2. **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.
     3. **Labs/Coop. Learning Activities/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 written lab report. Labs are designed to be completed independently or in groups based upon instructions. 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. Students 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.
     4. **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 and make note 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, or asking you to take a quiz on previously completed homework assignments, etc. Homework will be worth 10% during the first semester and 5% during the second semester.
  2. **Semester Exam:** At the end of each semester, a comprehensive exam will be given on scheduled Exam Days. These exams will cover **all** material covered during the semester.
  3. **Semester Grade Determination**

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| --- | --- | --- |
| **Category** | **Semester 1 Weight** | **Semester 2 Weight** |
| Tests | 40% | 40% |
| Quizzes | 25% | 30% |
| Labs/Coop. Learning Activities/Projects | 10% | 10% |
| Homework | 10% | 5% |
| Semester Exam | 15% | 15% |

* 1. **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.

1. **Class Policies and Procedures**
   1. **Absences and tardies:** The policy in the RVGS student handbook will be followed.
   2. **Make-up Work:** Any assignment missed due to any type of **excused** absence may be made up. You will not be allowed to make up work without a note. It is up to the student to check the course calendar to find out about missed work and then approach the teacher to arrange a suitable time for makeup work. 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. 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.
   3. **Late-work policy:** Late assignments (with the exception of homework which is not accepted late) will lose 10% credit for each day late and no assignments will be accepted more than **four days** late, at which point you will receive a zero. Group assignments are to be submitted on the due date regardless of whether all group members are present on the due date. Each day you are at Governor’s School counts as one day, even if you do not have my class that day.
   4. **Cheating:** The policy in the RVGS student handbook will be followed.
   5. **Technology Policy:** The RCPS Acceptable Use Policy and the RVGS student handbook policy will be followed.
   6. **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. The following options are available to you, but you should be sure to make arrangements with your teacher to make sure that he or she is available at a given time:
2. Before School (arrangements must be made in advance)
3. After School (including 11:00 – 11:30 am for AM students; 3:15 – 3:35 pm)
4. During Lunch (arrangements must be made in advance)
5. E-mail: Emails received before 3:15 pm Monday through Friday will be answered in a timely fashion; emails received outside these times will be answered at the teacher’s earliest convenience.
   1. **Parent Vue:** Grades are available through Parent Vue. For assistance with accessing your grades, please contact the school’s guidance counselor. If you have questions regarding a particular grade entry, please let your teacher know as soon as possible. When viewing your grades, understand that:
      1. A blank in the grade book means that the assignment has not yet been graded. Teachers will have all assignments graded within 5 school days of the due date (with the exception of very long assignments which will be graded within 10 school days). You may have a blank because the teacher has not graded the class set or because your assignment was turned in after the due date. Blanks do not count as zeros in your average.
      2. A zero in the grade book means that you have earned a zero on the assignment. Cases in which this might occur include submitting incorrect answers to an assignment or submitting an assignment past the due date.
      3. An excused (EX) in the grade book means that you are excused from the assignment without penalty.
   2. **General classroom procedures** 
      1. 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 the paper, you are agreeing to this premise.
      2. **Please do not wait until the day an assignment is due to ask questions about it**. Ask questions and get help and clarifications ahead of time.
      3. 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. There is plenty of time to talk during the course of the day—make sure you choose appropriate times to do so!
      4. Being on time and using available time to the fullest are important skills. 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 AB. Using class time to work on anything unrelated to AP Calculus AB is not acceptable.
      5. 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. **As is school policy, cell phones and smart watches will be put in the caddy at the beginning of each class period. This is not negotiable and you will not repeatedly be asked to follow this policy.**

**Agreement**

By signing below I acknowledge that I have read and understand the aforementioned policies and procedures outlined in this syllabus. I understand that this is a binding agreement between the student and instructor and that the information here is non-exhaustive and I am also bound to the policies and procedures set forth by the Roanoke Valley Governor’s School.

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parent Email: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Home School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_