Advanced Placement Calculus AB

Instructor: Paul Bremel, 2019-2020

Course Overview: AP Calculus AB

AP Calculus AB focuses on students’ understanding of calculus concepts and provides experience with methods and applications. Through the use of big ideas of calculus (e.g., modeling change, approximation and limits, and analysis of functions), the course becomes a cohesive whole, rather than a collection of unrelated topics. The course requires students to use definitions and theorems to build arguments and justify conclusions. The course features a multi representational approach to calculus, with concepts, results, and problems expressed graphically, numerically, analytically, and verbally. Exploring connections among these representations builds understanding of how calculus applies limits to develop important ideas, definitions, formulas, and theorems. A sustained emphasis on clear communication of methods, reasoning, justifications, and conclusions is essential. Teachers and students will regularly use technology to reinforce relationships among functions, to confirm written work, to implement experimentation, and to assist in interpreting results.

Units and Activities: What will we be learning about and doing in this course?

Unit 1: Limits and Continuity
Unit 2: Differentiation: Definition and Fundamental Properties
Unit 3: Differentiation: Composite, Implicit, and Inverse Functions
Unit 4: Contextual Applications of Differentiation
Unit 5: Analytical Applications of Differentiation
Unit 6: Integration and Accumulation of Change
Unit 7: Differential Equations
Unit 8: Applications of Integration

Standards: What knowledge and skills will I gain by the end of this course?

This course will assess the knowledge and skills students build in key Anchor Standards and Content Standards.

Anchor Standards:
Understand and Persevere - Students can make sense of problems and not give up when trying to solve them.
Model with Mathematics - Students can clearly show work using numbers, words, symbols, and graphs.
Attend to Precision - Students can review calculations and strategies to assess accuracy.
Content Standards: This course builds student knowledge using the Mathematical Practice standards. The content standards for AP Calculus AB are:

Assessment of Learning

Assessment Types:
Three types of assessments will be used to determine if you have gained the necessary knowledge and skills of this course: Formative assessments, Summative assessments, and Habits of Work for Learning. Each is briefly described below:

Formative Assessments: Formative = Forming my knowledge and skills. Formative Assessments receive a weight of .1 in the overall grade. Formative assessments are information for teachers, students, and parents on the progress students are making as they practice gaining knowledge and skills found in Anchor Standards. Teachers use the results of these assessments as data to understand individual student learning needs, adjust instructional pathways, and modify lessons to help students better meet course standards. Students
use the results of these assessments to determine how they are progressing and to plan steps to ensure their success.

**Summative Assessments**: *Summative = Summation of my knowledge and skills.* Summative Assessments can receive three different weights: 1, 1.5, or 2 depending on the size of the assessment, and therefore have the greatest impact on the Overall Course Mastery Grade. Summative assessments are used as a measure of independent student achievement in Anchor Standards. Throughout this course, summative assessments provide benchmark student achievement data. A summative assessment will always have clear scoring criteria for students to understand how they are performing.

**Habits of Work for Learning**: Habits of Work for Learning (HOWLs) are skills and dispositions that are essential to the learning process but do not provide evidence of what a student knows or can do in relation to content. WUHMS teachers work to foster Habits of Work for Learning in three categories: preparation, participation, and perseverance.

**Assessment Scoring:**
Teachers will provide framing for summative assessment scores using proficiency level scoring criteria for grading similar to the example below:

<table>
<thead>
<tr>
<th>Anchor Standard: Computational Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Standards:</strong> NGSS HS-LS2-1 Use mathematical and/or computational representations to support explanations of factors that affect the carrying capacity of ecosystems at different scales. NGSS HS-LS2-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.</td>
</tr>
<tr>
<td>Representation</td>
</tr>
<tr>
<td>Computational Modeling &amp; Analysis</td>
</tr>
<tr>
<td>1.0*</td>
</tr>
<tr>
<td>NC*</td>
</tr>
<tr>
<td>Beginning</td>
</tr>
</tbody>
</table>

* scores in the “Beginning range” are well below proficient and thus they are below passing.

**HOWL Scoring:**
HOWLs will be scored at least once per checkpoint, and will be based on the frequency with which students demonstrate each of the habits: preparation, participation, and perseverance.

**How is my Overall Course Grade Determined?**
Overall course grades will be reported as letter grades and will be comprised of:
- Formative & Summative Scores: 95%
- HOWLs: 5%
For more information, please see the WUHSMS student handbook.

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**Communication:**

**How Do I Know My Grades?**

- On Summative Assessments, a teacher will provide both a 4-point grade and a letter grade.
- You can monitor your progress in the following ways:
  - By reading feedback and scoring returned to students on summative assessments
  - By monitoring the scores and Overall Course Mastery Grade in the Parent/Student portal on JumpRope
  - By monitoring the grades sent home quarterly through report cards

**Where Can I Find This Syllabus during the School Year?**

- This syllabus will be available on the school website in each subject’s department tab once the school year is up and running.

**How Do I See What’s Due?**

- Summative assessment due dates and handouts are posted to the blue “Upcoming Assessment” section of the JumpRope Parent/Student Portal on or before the day they are assigned to students.

**How Do I See What’s Past Due?**

- If a student is missing an assessment, it will be listed in the red “Missing Assessment” section of the JumpRope Parent/Student Portal along with any attachments.

**Best Way to Contact Me:**

1. Email: pbremel@wcsu.net, I try to respond to email within 24 hours.
2. Phone message: 802-457-1317 x1004

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**Materials:**

Graphing Calculator - preferably TI-83 or TI-84
Notebook, pencil, pen (blue or black ink)

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**Schoolwide Procedures:**

Please see the Student Handbook for Procedures and Policies related to: Due dates and deadlines, extra credit, retaking assessments, and turnaround time for grade entry.

**Personal Mobile Devices:** This class will follow the procedures outlined in the student handbook
August, 2019

Dear AP Students and Families:

We are happy you have enrolled in one of the many AP courses offered at Woodstock Union High School. We are sending this letter home to families with new expectations related to AP course enrollment and test registration for the 2019-20 school year.

- Students are highly encouraged to sign up for the AP test. However, signing up for the AP test is optional. Regardless of whether a student signs up for the AP test, instructors will be teaching the AP curriculum.
- Teachers will be showing students how to sign up for the AP test during class during the first two weeks of school. There are new procedures for this process this school year. Also, look for an email from Peg DiBella with registration information.
- Students must register for the AP test online by October 1st.
- Students must submit their payment in full to Peg DiBella by October 4th. Payment is preferred by check.
- If payment is a limitation for a student, the student must speak with Peg DiBella prior to October 1st to potentially access financial support available.
- All AP students, regardless of whether they take the AP test, will complete a mock AP Exam and the results will be provided back to students. AP teachers will have discretion about the timing of this mock exam. For example, it could be administered in the weeks leading up to the AP exam as a practice.
- Regardless of whether a student takes the College Board AP test or not, the course will read “AP” on the transcript.
- Students will receive a .3 point GPA boost upon completion of the course (4-point GPA).
- AP Classes cannot be taken as Pass/Fail.

Sincerely,
Garon Smail
Principal, Woodstock Union High School and Middle School
I have read this syllabus, and I have contacted the teacher with any questions I have.

Student name (printed): ________________________________

Student Signed: ________________________________ Date: __________________

Parent/Guardian name (printed): ________________________________

Parent Signed: ________________________________ Date: __________________