Marianas High School
Team Effort Towards Excellence
Course Syllabus
AP Calculus

Teacher Information
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Degree: Master's in Teacher Education (MTE)/Bachelor's of Science (BS) in Mathematics, Eastern Oregon University

School Wide Initiative:
By the end of SY 16-17, all MHS students will increase their reading comprehension by 70 Lexiles or more as measured by Achieve3000.

School Mission:
The mission of the Marianas High School is to establish, maintain, and sustain a learning environment in which all students have the opportunity to develop the competencies and the confidence necessary to enter and succeed in a post-secondary educational institution or in an employment field of their choice.

Course Description: AP Calculus
AP Calculus is designed to develop students' understanding of the concepts of differential and integral calculus and to provide experience in applying them. Following a review of prerequisite knowledge, the course emphasizes a multi-representational approach to calculus with concepts, results and problems being expressed geometrically, numerically, analytically and verbally. The course also explores the connections among these representations.
The primary textbook for this course is *Calculus—Graphical, Numerical, Algebraic*, by Finney, Demana, Waits and Kennedy, 2007.

Course Competencies/ Learning Objectives
Students who successfully complete AP Calculus will be competent in the following areas:
- Students will be able to identify and work with functions.
- Students will be able to use local linear slopes to approximate derivatives.
- Students will be able to understand derivatives as rates of change and will be able to use them to solve problems.
- Students will be able to solve differential equations using numerical methods such as Euler's method.
- Students will be able to understand the definite integral as a limit of Riemann sums and as the net accumulation of change and will be able to use definite integrals to solve problems.

- Students will be able to understand the relationship between the derivative and the definite integral.
- Students will be able to communicate calculus concepts orally and in writing, having learned these concepts through answering practice problems from the text book labeled "Writing to Learn", that typically require written text explanations of relationships between functions.
- Students will be able to write clearly about applications of functions, differential equations, and integrals in the physical world.
- Students will be able to use technology to help solve problems, experiment with concepts, interpret results and verify conclusions.
- Students will be able to ensure solutions are reasonable in their signs, size, relative accuracy and units of measurement.
- Students will develop an appreciation of calculus as a coherent body of knowledge and as a human accomplishment.

Technology
Texas Instruments graphing calculators will be used to explore, discover and reinforce calculus concepts. For example, graphing calculators will generate numerical tables to verify conjectures about derivatives gathered from graphs. The graphing calculator will be used to experiment with parametric equations, so students may learn how altering different pieces of each equation alters the final graph and how y- and x-components vary relative to one another, and to simulate motion of particles using parametric equations. The calculator is used to find regression equation to fit real-world data for the purpose of interpretation. Students may use programs developed for the TI calculator to deal with Riemann Sums, Euler's method, slope fields, and the like. The graphing calculator may be used on some, but not all assessments. If available, students will be provided with TI-83 or TI-84 graphing calculators for in-class use only. It is highly recommended that each student buy a personal TI-83 or TI-84 calculator. Computer with relevant applications and LCD projector (as available).

Resources and supplementary materials
Pearson Education AP Test Prep Series
Previously published AP multiple choice and free response questions, including the 1997, 1998 and 2003 released exams.
AP Calculus AB Institute materials.
AP Central website
Internet sites, like www.calculusapplets, www.mevl.net, www.hippocampusorg .

Materials:
You are expected to bring the following materials to class everyday.
- Notebook (note taking)
- Pencils and erasers
- **A Graphing Calculator** such as the TI-83+ or TI-84+ is strongly recommended.
- Gmail account (for Google Drive sharing of ebook)

Student Evaluation
The CNMI Public School System grading policy suggests the following breakdown for scores:
Percent Letter Grade
93 – 100 A   83 – 92 B   73 – 82 C   63 – 72 D   0 – 62 F

The grading system for the AP Calculus course at Marianas High School is as follows:

In-class/group activities	15%
Journal	5%
Practice Assignments	25%
Quizzes/Tests	40%
Final exam	15%

In accordance with MHS policy for AP classes, the earned graded is increased by 10% for each student at the end of each quarter.

Students will periodically have quizzes to test their knowledge of the content of two or three sections of a chapter. Quizzes will indicate which topics require extra study. Tests cover a larger body of material and will be given after completion of each chapter. Two to three days of review will precede each test. Each test will use a variety of formats, such as multiple choice, short answer and sketching, in order for students to express their understanding in different ways. Some problems may require the use of a calculator. Others may prohibit its use. Most problems will be similar to AP Exam questions. There will be one cumulative final exam per semester. Final exams will include both multiple choice and free-response questions, and will also occasionally require a calculator.

Attendance Policy
Regular and prompt class attendance is an essential part of the educational experience. Marianas High School expects students to exercise good judgment regarding attendance and absences. Students will accept full responsibility for ensuring their work does not suffer because of absences. All students are expected to attend every scheduled class on time. Exceptions may be made for illness and valid emergencies. Students who miss more than two classes per quarter for any reason are considered at risk, and can expect to discuss ways to improve their attendance with the teacher, and probably with their parents. **Refer to student handbook for information.**

Classroom Expectations
The purpose of the class is to learn calculus and prepare for the AP Calculus AB Exam. Any behavior that distracts significantly from this purpose can not be accepted.
1. Students will come to class on time prepared and ready to learn.
2. Students will complete all assignments, including homework, by all deadlines. Make-up work is only accepted after an excused absence. It is your responsibility to see me for your work before or after school.
3. All students will be silent and respectful while other students read aloud.
4. The teachers and students will work together for a respectful, safe classroom.
5. Participation in class discussions will enhance all students' learning experiences.
6. Students are expected to have all assigned readings completed; this may require some reading to be completed outside of the classroom.
7. Cell phones and any other electronic devices are prohibited in class at any time, unless directed otherwise by the teacher.
8. Sleeping is not allowed in the classroom and will be interrupted by the teacher.
9. Students are expected to talk to the instructor if you have a special problem that hinders your progress in the course in order to get the help you need.

Class Requirements
Students will be required to successfully and correctly complete tests, exams, quizzes, and homework. Students will be required to complete some of these outside of school hours. Students will participate meaningfully and respectfully in classroom discussions, maintain good attendance, have a respectful and positive attitude, and come to class ready to learn.

Remediation (Rewrite) Policy
Students will have the opportunity to remediate each test or quiz and earn a maximum of half the points that were missed on the test or quiz, if it was initially submitted on time. This means that students may resubmit a test or quiz with some or all mistakes corrected within a time period determined by the teacher (usually no more than three days after the assignment was returned to the student). The submission must include an explanations of the way to arrive at the correct answer and how to avoid the same errors in the future.

Plagiarism, Cheating, and Academic Integrity
Plagiarism is the practice of copying words, sentences, images, or ideas for use in written or oral assessments without giving proper credit to the source. Cheating is defined as the giving or receiving of help on anything that has been determined by the teacher to be an individual effort. Both are considered serious offenses and will significantly affect your course grade. Please refer to the Student Handbook booklet for additional information.

Achieve3000 Lessons:
Students will be completing a minimum of 3 lessons per week in their LA, Science, & Social Studies class. Students are welcome to do more lessons. Please see teacher for more info.

<p align="center">Course Calendar
<strong style="color:red">Subject to Change (Students must update their syllabus)</p>

Unit/ Topic	Course Activities	Unit Learning Outcomes	Assessments/ Assignments	Timeframe
Unit 1 Prerequisites for Calculus	Review: lines, functions, graphs, exponential functions, logarithms and trigonometric functions	Students will be able to identify, write, graph and apply functions (including linear, exponential, logarithmic and trigonometric functions).	Diagnostic assessments	(2-3 weeks)
Unit 2 Limits and Continuity	Read, interpret, analyze, and summarize: Rates of change and limits Limits involving infinity Continuity Rates of change and tangent lines	Students will be able to use identify and solve problems involving rates of change, limits and continuity.	Written and oral responses, tests, and projects	(3 weeks)

Unit	Read, interpret, analyze, and summarize	Objectives	Assessment	Time
Unit 3 Derivatives	Read, interpret, analyze, and summarize: Derivative of a function Differentiability Rules for differentiation Velocity and other rates of change Derivatives of trigonometric functions Chain rule Implicit differentiation Derivatives of inverse trigonometric functions Derivatives of exponential and logarithmic function	Students will be able to understand derivatives as rates of change and will be able to use them to solve a variety problems.	Written and oral responses, tests, and projects	(5-6 weeks)
Unit 4 Applications of Derivatives	Read, interpret, analyze, and summarize: Extreme values of functions Mean value theorem Connecting f' and f" with the graph of f Modeling and optimization Linearization and Newton's method Related rates	Students will be able to apply derivatives to a variety of real-world problems.	Written and oral responses, tests, and projects	(5 weeks)
Unit 5 The Definite Integral	Read, interpret, analyze, and summarize: Estimating with finite sums Definite integrals Fundamental theorem of calculus Trapezoidal rule	Students will be able to describe the definite integral as a limit of Riemann sums and as the net accumulation of change and will be able to use definite integrals to solve problems. Students will be able to describe the relationship between the derivative and the definite integral.	Written and oral responses, tests, and projects	(3-4 weeks)
Unit 6 Differential Equations and Mathematical Modeling	Read, interpret, analyze, and summarize: Slope fields and Euler's Method Antidifferentiation by substitution Antidifferentiation by parts Exponential growth and decay Logistic growth	Students will be able to solve differential equations, use slope fields and use Euler's Method, and find antiderivatives to specific expressions.	Written and oral responses, tests, and projects	(4 weeks)
Unit 7 Applications of Definite Integrals and L'Hopital's Rule	Read, interpret, analyze, and summarize: Integral as net change Areas in the plane Volume L'Hopital's Rule	Students will be able to apply definite integrals to a variety of real-world problems. Students will be able to define and use L'Hopital's Rule.	Written and oral responses, tests, and projects	(3 weeks)

| Unit 8 Review/Test Preparation | Multiple-choice practice *(Items from past exams are used, as well as items from review books)* 1.Test-taking strategies are emphasized 2.Individual and group practice are both used Free-response practice *(Released items from the AP Central website are used liberally; solutions to these problems will include the use of written sentences to express mathematical ideas.)* 1. Rubrics are reviewed so students see the need for complete answers 2. Students collaborate to formulate team responses 3. Individually written responses are crafted. Attention to full explanations is emphasized | Students will be confident with the structure and style of the AP Calculus AB Exam through the use of similar materials. | Sample tests and problems | (3-5 weeks) |

Special Accommodations
Please see me or email me if you require special accommodations due to learning disabilities, religious practices, physical requirements, medical needs, or any other reasons.

--CUT HERE--

PARENT-STUDENT AGREEMENT

Student Name:_____   Period:_____   Date:_____

I have received, read, and understand the **AP Calculus AB** course syllabus and outline. _____ (initial)
I understand my responsibilities in this class. I understand that this is an _academic classroom_ and I agree to conduct myself accordingly. _____ (initial)

I understand the grading system and policies to be used in this class. _____ (initial)

I accept that the grades I receive while enrolled in this class will be a direct reflection of the level of effort and commitment that I put toward my assigned work. I accept responsibility for _all_ work that will be assigned in this class. _____ (initial)

I accept responsibility for the consequences I will experience should I choose not to comply with all that is required of me for the successful completion of this course. _____ (initial)

I accept that if, at any time, I do not successfully complete all of the assigned work in this class, I will be placed on academic remediation, I will receive a disciplinary referral, and I will be required to explain my academic behavior in a conference attended by me, my parent/guardian, my teacher, and the vice-principal for student personnel. _____ (initial)

I will treat all of the school's property and (Teacher) property with the utmost respect and care. I understand that if **Ms. M. Taisacan** decides that I have not been respectful of his property or school property, he has the right to not let me use it. If this happens, I must bring my own device, borrow a friend's, or use the school's computers to complete all classroom activities and tasks._____ (initial)

_____   _____
Student Signature   Print Name

By signing below, I acknowledge I have read this Parent-Student Agreement and that all of the contact information below is correct.

_____   _____
Parent/Guardian Signature   Print Name

Parent Email: _____   Contact Number: _____

Parent Facebook: _____