**MARSHALL COUNTY HIGH SCHOOL** Mrs. Charlotte Zajac

SYLLABUS FOR AP CALCULUS (Course #3127-001) Fall 2014/Spring 2015

Room #140

***Course Description:***

*Prerequisites: Pre-Calculus*

The Advanced Placement Program provides an opportunity for secondary school students to pursue and receive credit for college-level course work competed at the secondary school level. Advanced Placement Calculus uses the College Board Advanced Placement Curriculum outline. This national outline is the summary of concepts needed for preparation for the Advanced Placement Examination. This course, while maintaining strict, traditional mathematical content, will incorporate technology to study limits, derivatives, integrals and applications. Previous mathematics courses will serve as a foundation for calculus. From Algebra and Pre-Calculus, students should be able to recognize and understand patterns and functions, solve equations and should be skilled at analyzing functions both algebraically and graphically. From Geometry, students should be familiar with figures, areas and volumes. Students should also be able to use and analyze data, find and use prediction equations and generally be proficient using graphing technology. Students not proficient in Pre-Calculus topics should seek remediation outside of class. The following topics will be covered in class:

**First Quarter**

Unit One-Limits and Their Properties

* Analysis of Graphs
* Limits of Functions, including one-sided limits
* Continuity as a Property of Functions
* Infinite Limits

Unit Two-Differentiation

* Concept of a Derivative
* Tangent Line Problem
* Rules for Differentiation
* Rates of Change
* Higher Order Derivatives
* Chain Rule
* Implicit Differentiation
* Related Rates

**Second Quarter**

Unit Three-Applications of Differentiation

* Extreme Values of a Function
* Rolle’s Theorem
* Mean Value Theorem
* First and Second Derivative Test
* Limits at Inifinity
* Modeling Optimization
* Differentials

Unit Four-Integration

* Concept of Integration as an Antiderivative
* Areas in the Plane
* Riemann Sums
* Fundamental Theorem of Calculus
* Techniques of Antidifferentiation
* Applications of Antidifferentiation
* Numerical Approximations to Definite Integrals

**Third Quarter**

Unit Five-Logarithmic, Exponential and Other Transcendental Functions

* The Natural Logarithmic Function: Differentiation and Integration
* Exponential Functions: Differentiation and Integration
* Bases other than ***e*** and Applications
* Inverse Trigonometric Functions: Differentiation and Integration

**Fourth Quarter**

Unit Seven-Applications of Integration

* Area of a Region Between Two Curves
* Volume: The Disk Method
* Surfaces of Revolution
* Volumes of Known Cross-Sections
* Intensive AP Exam preparation

***Supplies:***

* Students will need a three ring binder (at least 1” in size) with three dividers.
* I recommend each student have a **SCIENTIFIC CALCULATOR** of their own to use at all times. Graphing calculators will be available to use in class.

***Course Curriculum:***

See College Board Course Description <http://media.collegeboard.com/digitalServices/pdf/ap/ap-calculus-course-description.pdf> . Textbook is Larson/Edwards’ Calculus, 9th Edition.

***Classroom Rules:***

Rules will be discussed during class, but basically revolve around RESPECT, for yourself, others and school property. You can access current Marshall County School Board Policy at <http://boardpolicy.net/documents/type.asp?iType=6&iBoard=24> and the MCHS Handbook at <http://mchs.marshall.k12tn.net/> .

Any infractions will be handled on a case-by-case basis and will progress as follows

|  |  |
| --- | --- |
| 1st Offense | Documented Warning |
| 2nd Offense | Classroom Consequence (depending on severity of offense) |
| 3rd Offense | Parent/Guardian contact |
| 4th Offense | Discipline referral to administration |

|  |  |
| --- | --- |
| ***Grading Scale:***  A 93-100  B 85-92  C 75-84  D 70-74  F 0-69 | ***Grading Categories:***  Vocabulary Checks 10%  Assessments 30%  Notebook Checks 20%  9 weeks tests 25%  Projects 15%  ***Five points will be added to the final grade for Advanced Placement students.*** |

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***Student Expectations:***

***Attendance:***

It is impossible to replicate a class that has been missed and, because we use block scheduling, each school day is equivalent to two regular class periods. Please try and schedule appointments around classes when possible.

***Make-up Work:***

It is the student’s responsibility to ask for make-up work, including any quizzes or tests that have been missed. Board policy states that a student is allowed one day per day of absence to make up any missed work (Policy #6.2001).

***Homework Policy:***

Homework will be assigned most every day and should be used by the student to practice new skills. I will check homework assignments on a random basis for completeness.

***Projects:***

All students will be required to complete at least two projects during the semester that will represent 15% of their grade. They will be graded individually and very little class time will be used to work on them.

***Parent-Teacher Communication:***

The best way to communicate with me is through email: [czajac@k12tn.net](mailto:czajac@k12tn.net) . You may also leave a message in the office (phone number is (931) 359-1549) and I will return your call during my planning time or after school.

I have set up each class in an online application called Remind 101 and will periodically send reminders/updates regarding activities, tests, etc. via text message. Students and parents are welcome to sign up for these updates and may do so by texting the following to (724) 227-0092:

2nd Block @zajac2nd

***Remediation/Test Makeup:***

I will be available daily from 7:15 – 7:45am in my classroom and at other times by request.

***Classroom Renaissance Incentives:***

For students who have earned Renaissance cards, the following incentives will be given in this class:

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| --- | --- |
| Blue Card | 20 points added to lowest test grade |
| White Card | 15 points added to lowest test grade |
| Black Card | 10 points added to lowest test grade |
| Gray Card | 5 points added to lowest test grade |

Awards cannot be combined; higher award will be given.

By signing below, I acknowledge that I have read and understand all portions of the syllabus for AP Calculus.

Student Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent/Guardian Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_