AP Calculus AB

Instructor Information: Instructor: Mrs. Kim O'Neill
Room: C212 Phone: 883-5099
E-mail: oneill.kimberly@cusd80.com
Office Hours: Monday and Tuesday after school 2:20 – 3:00

Over the course of the year it is my hope that you will deepen your understanding of mathematics, strengthen your problem-solving skills and see the usefulness of mathematics in the world around you. I will expect you to be willing to try new things, to always put forth your best effort, to present a positive attitude, to respect those around you and to take full advantage of the resources available to you at Hamilton High School.

Course Overview: This course is designed for the student who has shown superior achievement in an accelerated high school, college preparatory curriculum. The course includes all topics recommended by the College Board Committee for the Advanced Placement Calculus AB program. Since this course prepares students for the AP Calculus AB Exam it is expected that every student will take the AP Calculus AB exam or enroll in the Dual Credit Program or both. We hope that every student who successfully completes this course will receive some type of college credit.

Homework and WeBWorK: Materials: organizational binder, notebook paper and pencils
Suggested Calculator: TI-83, TI-83+, TI-84+

It is the student's responsibility to do all of the assigned work. Write down the original problem and all supporting work. A list of answers is not acceptable. Assignments are checked at the discretion of the teacher. Assignments are 5 points each. Points will be deducted for late work.

Included with your homework responsibitiy **is WeBWorK**, an online homework program.
Please bookmark this site: webwork.cusd80.com/webwork2 .
Username is your last name first initial (smithj) and your password is your student ID number
WeBWorK assignments are major assignments that the students are usually given a week or two to complete. A hard copy should be printed as soon as it is available and brought to school each day. Every few days, answers should be input. Do not wait until the end! No extensions will be given, even for technology problems. Students must turn in a printout of their WeBWorK problems, along with all work clearly shown, the day after it is due online.

Course Objectives: The learner will:

1. Evaluate limits numerically, graphically, and analytically.
2. Be able to calculate the derivative of a function numerically, graphically, and analytically.
3. Be able to calculate derivatives and apply them to a variety of applications.
4. Be able to evaluate integrals numerically, graphically, and analytically.
5. Be able to differentiate and integrate transcendental functions.
6. Be able to apply integration in solving practical applications and represent the problems graphically and analytically.

Classroom Rules:

1. Be prepared every day with all necessary supplies and completed homework. Take care of all personal business before coming to class.
2. Be respectful to yourself, your classmates and your teacher.
3. **Profanity is not allowed.**
4. Follow directions the first time they are given.
5. During instruction raise your hand and wait to be called upon to speak.
6. **No food or drink** (except water) is allowed in the classroom. Please finish and dispose of all food and drink before entering the classroom.

Evaluation and Grading: Grades are determined quarterly. Evaluation each quarter will be based on tests & quizzes (approximately 85%) and homework (approximately 15%). Semester grades will be calculated based on 1st Quarter (40%), 2nd Quarter (40%) and Final Exam (20%). Cheating will not be tolerated and will result in a grade of ZERO and a referral. Late work will be accepted, provided that it is due to an excused absence.

Once I see you in person, No makeup quizzes will be given.
If you miss a quiz and the absence is excused, then you are excused from that quiz.
If you miss a quiz and the absence is unexcused, then you will receive a score of zero for that quiz.

Grade Scale(%): A = 90-100 B = 80-89 C = 70-79 D = 60-69 F = 0-59

School/district policies will be followed in the areas of behavior, tardiness, absenteeism, makeup work, abuse of technology, etc. You have the number of days you were absent to turn in late homework or to take a test. Work not made up within the appropriate time frame may result in a score of zero. It is the student's responsibility to turn work in within the appropriate time frame.

The following policies will be emphasized:

* No food or drink in the classroom
* After 9 absences, you may be dropped from class
* Appropriate behavior is expected
  Any student violating school behavior policies is subject to disciplinary action
* Profanity is not allowed
* For every 5 tardies, you will be assigned to Saturday School
* No cell phone usage during class
  Electronic devices that I see or hear may be confiscated

Advanced Placement Program: AP Calculus is equivalent to a college level Calculus course. Most universities will give 4 credits for a successful AP exam (given in early May). Tax credit money can be used to pay the cost of the exam. The AP Calculus Exam is a difficult, challenging exam. Students who wish to score a 3 or better on this exam need to study, memorize and work hard throughout the year, and practice as many sample questions as possible prior to taking the exam.

Dual Credit: Students can earn college credit through Chandler-Gilbert Community College (CGCC). The students who are simultaneously enrolled in Calculus at the high school and college level take the course at Hamilton High School for credit at both institutions. If the student maintains a "C" grade in both semesters of the course and pays the tuition fee to CGCC, they will receive official credit from the college for transfer to a college or university as a math credit or an elective. The student should contact his/her specific college or university for confirmation of credit before enrolling in dual credit.

Calculus AB (MAT 220) is a 5 credit hour course and the tuition is approximately $425.

Appropriate use of technology – board policy IJNDC-R: The Governing Board intends that technological resources provided by the District be used in a safe responsible and proper manner in support of the instructional program and for the advancement of student learning. It is the policy of the Chandler Unified School District to maintain an environment that promotes ethical and responsible conduct in all electronic resource activities by staff and students. The District reserves the right to monitor use of the District's systems for improper use without warning or prior consent. Students shall be informed that computer files and electronic communications, including email, are not private and may be accessed by the District at any time. Inappropriate use may result in disciplinary action and/or legal action in accordance with the law and Board policy. Please visit the student handbook at https://www.cusd80.com/handbooks for further details about appropriate use of technology use.

Virtual Attendance Statement: Attendance is based on engagement. If a student is not present for synchronous instruction and does not complete the asynchronous/alternative assignment for the daily class meeting, then the student is considered absent. Teachers will contact attendance clerks once a student is determined to be absent.

Diversity Statement: All individuals have a right to an educational environment free from bias, prejudice and bigotry. As members of the Hamilton High School educational community, students are expected to refrain from participating in acts of harassment that are designed to demean another student's race, gender, ethnicity, religious preference, disability or sexual orientation.

Student Name (print) _____ Parent Signature _____

Student Signature _____ Date _____

Period: _____

Chapter 1: Prerequisites for Calculus

1. Linear Models and Rates of Change
2. Functions and Graphs
3. Fitting Models to Data
4. Inverse Functions
5. Exponential and Logarithmic Functions

Chapter 2: Limits and Their Properties

1. Finding Limits Graphically and Numerically
2. Evaluating Limits Analytically
3. Continuity and One-Sided Limits
4. Infinite Limits

Chapter 3: Derivatives

1. The Derivative and the Tangent Line Problem
2. Basic Differentiation Rules and Rates of Change
3. Product and Quotient Rules and Higher Order Derivatives
4. Chain Rule
5. Implicit Differentiation
6. Derivatives of Inverse Functions
7. Related Rates
8. Newton's Method

Chapter 4: Applications of the Derivative

1. Extrema on an Interval
2. Rolle's Theorem and the Mean Value Theorem
3. Increasing and Decreasing Functions and the First Derivative Test
4. Concavity and the Second Derivative Test
5. Connecting $f'(x)$ and $f''(x)$ with the Graph $f(x)$
6. Limits at Infinity
7. A Summary of Curve Sketching
8. Optimization Problems
9. Differentials

First Semester Review and Exam (1 week)

Chapter 5: Integration

1. Antiderivatives and Indefinite Integration
2. Area
3. Riemann Sums and Definite Integrals
4. Fundamental Theorem of Calculus
5. Integration by Substitution
6. Numerical Integration, The Trapezoidal Rule
7. The Natural Logarithmic Function: Integration
8. Inverse Trigonometric Functions: Integration
9.

Chapter 6: Differential Equations

1. Slope Fields and Euler's Method
2. Differential Equations: Growth and Decay
3. Differential Equations: Separations of Variables
4. First Order Linear Differential Equations

Chapter 7: Applications of Definite Integrals

1. Area of a Region Between Two Curves
2. Volume: The Disc Method
3. Volume: Cross Sectional Area Method
4. Volume: Solids of Revolution

Chapter 8: L'Hopital's Rule

1. Indeterminate Forms
2. L'Hopital's Rule

Review for AP Exam

AP Calculus AB Exam: May 4, 2021

Final Exam