

Harbor Springs High School AP Calculus

Course Description/Objectives

Throughout this year this course we will be discussing and exploring calculus its applications. The assessment of this course will be done through participation, homework, and tests. Both homework and tests will require students to express understanding of mathematical concepts through both quantitative results as well as verbal and written explanations of a result in order to support a conclusion. Some of the essay-type questions utilized in homework and tests will be pulled from past years' AP Tests. This class is designed so that students will have the ability to take the AP Calculus AB test.

Course Topics & Timeline

1st SEMESTER AP CALCULUS AB		
SECTION NUMBERS	TOPICS	TIMELINE
P.1, P.2, P.3	Review of Pre-Calculus	6 days
<i>Test</i>	<i>Review of Pre-Calculus</i>	<i>1 day</i>
1.3	Evaluating Limits	2 days
1.4	Continuity and One-Sided Limits	2 days
1.5	Infinite Limits & Asymptotes	2 days
3.5	Limits of Infinite	1 day
<i>Test</i>	<i>Limits</i>	<i>1 day</i>
2.1	Idea of a Derivative	2 days
2.2	Basic Integration Rules	2 days
2.3	Product & Quotient Rules	2 days
2.4	Chain Rule	2 days
2.5	Implicit Differentiation	1 day
<i>Test</i>	<i>Derivatives</i>	<i>1 day</i>
2.6	Related Rates	4 days
<i>Quiz</i>	<i>Related Rates</i>	<i>1 day</i>
3.2	Rolle's & Mean Value Theorems	1 day
3.1	Extrema: Maximums and Minimums	2 days
3.3 & 3.4	Increasing, Decreasing, & Concavity	4 days
<i>Test</i>	<i>Curve Sketching</i>	<i>1 day</i>
3.7	Optimization Problems	3 days
<i>Quiz</i>	<i>Optimization</i>	<i>1 day</i>
5.1	Natural Log-Differentiation	2 days
5.4	Natural Exponential	2 days
5.5	Bases Other than e	2 days
5.6	Inverse Trig-Differentiation	2 days
<i>Quiz</i>	<i>Other Derivatives Quiz</i>	<i>1 day</i>
Extra	Slope Fields	1 day
4.1	Antiderivative & The Integral	2 days
4.3	Definite Integrals & Area	2 days
4.4	Fund. Theorem of Calc. & Avg. Value	2 days
<i>Test</i>	<i>Integration</i>	<i>1 day</i>
4.5	Integration by Substitution	3 days
<i>Quiz</i>	<i>Substitution</i>	<i>1 day</i>

2nd SEMESTER AP CALCULUS AB		
SECTION NUMBERS	TOPICS	TIMELINE
6.2	Differential Equations-Application	2 day
6.1 & 6.3	Differential Equations-Sep. of Var.	2 days
<i>Quiz</i>	<i>Diff. Equations</i>	<i>1 day</i>
5.3	Inverse Functions	1 days
5.2	Natural Log-Integration	2 days
5.4	Natural Exponential	2 days
5.5	Bases Other than e	2 days
5.7	Inverse Trig-Integration	2 days
<i>Test</i>	<i>Other Integral and Inverse Functions</i>	<i>1 day</i>
7.1	Area Between Curves	3 days
7.2	Volumes of Revolution-Disc/Washer	3 days
7.3	Volumes of Revolution-Shell	3 days
<i>Test</i>	<i>Volumes of Revolution</i>	<i>1 day</i>
7.4	Arc Length/Surface Area	2 days
7.5	Work	3 days
7.6	Center of Mass	3 days
7.7	Pressure	2 days
<i>Test</i>	<i>Application of Integration</i>	<i>1 day</i>
8.2	Tabular & Integration by Parts	3 days
8.3	Trig Integrals	3 days
8.4	Trig Substitution	3 days
8.5	Partial Fractions	3 days
8.7	L'Hopital's Theorem	1 day
<i>Test</i>	<i>Integration Techniques</i>	<i>1 day</i>
Extra	AP Prep	1.5 Weeks

Text & Materials

- Text (provided):
 - Larson, Ron, Bruce H. Edwards, and Robert P. Hostetler. *Calculus of a Single Variable*. Boston: Houghton Mifflin.
- Graphing calculators will be a necessity for this course
 - I would recommend getting one of your own but I do have a few students can check out.
 - Any of Texas Instrument graphing calculators will be acceptable for this course
 - TI-83, 84, 85, 86, 89
 - Calculators will be used for the following evaluating data in the following ways as well as check results to assure a logical conclusion
 - Graphing functions
 - Finding the derivative at a point
 - Intersections of functions
 - Slope fields
 - Area approximations
 - Definite integrals for use in areas and volumes

Course Procedures & Policies

Tests/Quizzes:

- You **MUST** finish the test in the time allotted during class
 - The AP test is timed so this will help you prepare for that
- There will be no retakes on tests or quizzes
- They will consist of both multiple choice and free response questions

Attendance & Participation:

- Each day you will receive five points for participation.
- If you are absent for any other reason than a school related event, you will receive 0 points.
- IF YOU ARE LATE, you will receive at most 3 of five possible points. If you are late you must sign in when you enter class. Class should not be disrupted because of a late arrival.
- You get 3 passes each trimester. Any passes you don't use become extra credit on your final.
- If class is disrupted or has to stop because of your behavior, you will lose points accordingly.

Homework:

- Homework will be assigned as we cover and explore new topics.
- At the end of each unit you will turn in a workbook of your homework for the unit all at once along with your test.
- There will be time for questions at the beginning of class and time to work on homework at the end of most class periods.
- Late homework will receive 70% of the possible points the first day late, 50% the second day late, and none after that.

Missed Assignments and Tests:

- You have one week to make up tests. After a week, it becomes a zero.
- You are responsible for finding out what you missed and making it up.
- Make up tests can be done before or after school

Academic Dishonesty:

- Cheating will not be accepted, if anyone is caught cheating on an exam they will receive 0 points.
- There will be times when working with others is encouraged.

Grading Breakdown:

- I give everything back the next day with a grade. You should know your standing in the course and are responsible for looking at Power School.
- Grade breakdown: Tests: 70%, Homework: 20%, Participation: 10%

General Procedures:

- We will be adhering to all Harbor Springs High School Handbook and Code of Conduct.
 - Students may not bring back packs, side packs, fanny packs, drawstring bags, or large purses in your rooms.
 - Students may not have phones on or out during class.
 - i. Use the phone caddy in the front of the classroom.
 - ii. Teachers will confiscate first time – Phones will be held for 1 week unless requested by parent to return.
 - iii. Second offense – no return policy.
 - iv. Student may carry the phones everywhere except the PE complex. They must be turned off in the classroom.
 - Students may not be in the academic wing during their scheduled lunch without a pass from you. They will not be allowed to take food into that area.
 - Students will not have computers out unless we are working with them. If I have to tell you to put your laptop away, you will lose participation points.
 - Students may not eat or drink anything but water in your classrooms
 - Students may not wear hats or coats in your rooms
 - Students will adhere to the HSHS dress code
 - I expect a respectful environment in my classroom.
 - When someone else is talking, you are not.
 - If someone needs help, you assist him or her in anyway possible.
 - You are going to work with others and you will learn to do so in a professional, respectful manner.
 - Violence and/or bullying of any kind will not be tolerated.
 - Respect this facility and the furnishings. I do not want to see desks and wall defaced.
 - It is a privilege to be in this class, please treat it that way.
 - If you know you are going to need to leave the room before the end of the hour, please let me know before the start of class.
 - I am always open to question and concerns, feel free to approach me if you have a problem.
- Things on this syllabus are subject to change without notice.