

# Honors Pre-Calculus

2016-2017

## Course Syllabus

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### **Course Description**

Math Analysis, or Pre-Calculus, is a high intensity course that will include an integration of Algebraic and Geometrical Concepts. We will cover a great deal of material this year and move at a rapid pace. The goal of the course is to prepare you for a study of Calculus, whether at Lakewood High or in college.

### **Attendance**

Attendance is vital. While good attendance does not guarantee success in this course, it does increase the likelihood of earning a passing grade.

### **Office Hours**

Each Monday, Tuesday, Thursday, & Friday, 7:00 – 7:30 a.m. in room B-204. Arrangements can be made for other times.

### **Grades**

Grades will be based on the following:

1. **EXAMS** (60% of overall grade)  
Exams will be taken at the end of each unit of study. You will be given a minimum of one week notice prior to the exam date. This is the most important piece of the overall grade. Each exam will cover the new material from the current unit and may include problems from previous units. Students who miss an exam due to an excused absence will be given one week from the original exam date to make up the exam. In order to make up an exam, all assignments for that unit must be completed and handed in prior to the make up. The make up exam may be completely different from the original and may be longer and more challenging. If the make up exam is not taken within the one week time period, a score of zero will be recorded. Any exam missed due to an unexcused absence will not be scored and a score of zero will be recorded. Attendance is your responsibility. A final exam will be given in both December and May. Please refer to your planner for exam dates. There are no attendance exemptions for the final exams. The final exam will count as a double test score. The percent earned on the final exam will replace the lowest test score earned during that semester. (A missed exam with a score of zero does not apply and is not eligible to be counted as the low test score)
2. **QUIZZES** (15% of overall grade)  
Quizzes will be given once per week on either Thursday or Friday. We will take approximately 13 quizzes and will keep only the top 10 scores. Quizzes missed must be made up prior to the next class period we meet. Arrangements can be made to take quizzes ahead of scheduled time, during the student's open hour.

3. **CLASSWORK/PROJECTS** (15% of overall grade)  
Classwork will include warm up activities, group work completed during the class period, and occasional homework assignments. All worksheets for the semester will be available in the new Pre-Calculus textbook.
4. **Do These Quickly (DTQ's)** (10% of overall grade)  
DTQ's are quick warm up activities. Questions will include multiple choice questions in preparation for the ACT or SAT test. These questions will also prepare us for our final exams and AP Calculus.
5. **BONUS:**  
Students will have the opportunity to make up points during the semester.
  - A) Students may bring a progress report, signed by the parent, during the last week of each month. These progress reports can be printed off Infinite Campus.
  - B) Students can earn points by coming in during access or any free period they have on their schedule. Access is from 7:00 - 7:30. Students may come in to my room during their free periods to work on assignments, study for exams or quizzes, or to work on notes. This opportunity is available even during periods in which I am teaching a different class. Students can come in, sign their name in the notebook, and sit in an empty desk and work as long as they need. Points are earned based on the time spent working on math only at the rate of 1 point for each 30 minutes, one letter grade max.

Homework will be given daily and will be handed in two class periods later (generally). Not every assignment will be collected. It is the responsibility of the student to complete the assigned problems, even if the assignment is not collected. Homework problems will be used to develop the daily warm up activities and weekly quizzes. Assignments will be given to provide opportunities for practice of the key concepts in this course. Failure to complete assignments will result in lower grades.

### **Absences**

Absences will be recorded as excused and unexcused for the purpose of makeup work. Work that is missed due to absences will receive credit if the student contacts teachers on the day he or she returns from any absence to arrange to complete all makeup work assigned and to establish when this makeup work is due.

Makeup work for the first two unexcused absences will be allowed for credit with one grade reduction for all work completed. After the first two unexcused absences from a class, makeup work will be allowed for credit with two letter grade reductions for all work completed.

### **Grade Breakdown**

|   |               |   |
|---|---------------|---|
| A | 90% or higher | Exceptionally strong knowledge of content |
| B | 80% to 89.9%  | Strong knowledge of content               |
| C | 70% to 79.9%  | A good knowledge of content               |
| D | 60% to 69.9%  | Some knowledge of content                 |
| F | Below 60%     | No evidence of knowledge of the content   |

**Books & Materials**

Textbook: We will use the Lakewood High School developed textbook for this course. There is NO cost for these.

- Materials: 1) 3-Ring Binder for textbook and worksheets
- 2) Graphing Calculator (TI-83, TI-83Plus, TI-84, TI-84 Plus)

**Class Notes / Lecture**

Class notes for each section of this course will be available via our new Pre-Calculus textbook. The notes are developed as a fill in the blank format to allow student to focus more time on the presentation and less on writing down every little detail. Students who miss class need to print a copy of the notes and see a classmate to complete them. Office hours will not be used for repeat lectures.

**Food & Drink**

As per school policy, no food or beverage, except water, is allowed in the academic wing, no exceptions.

**Technology in the Classroom**

Cell phones, head-phones, and i-pods are to be off and put away during class. Teachers may determine when cell phones and other technology are to be used for educational purposes.

- 1st Offense: Warning
- 2nd Offense: Teacher takes the device
- 3rd Offense: Teacher takes the device and brings it to the student's administrator.

Video Games: The playing of video games will NOT be allowed in the school.

***I reserve the right to change this syllabus without notice.***

Please sign and date on the appropriate line below. Signatures mean that you have read the syllabus and have made yourself aware of the policies set forth for Pre-Calculus. Return this sheet only, signed by you and your parent(s) / guardian(s) as a part of our first assignment.

\_\_\_\_\_  
Student signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent / guardian signature

\_\_\_\_\_  
Date

Scope & Sequence of topics:

## **FALL SEMESTER**

### ***Chapters 1 and 2 ~ Functions & Systems***

These two chapters set the foundation for the class while allowing students to recall previously learned material from Algebra 2. Students will be expected to use technology to extend thinking as well as be able to manipulate and solve multiple forms of equations and inequalities. This material acts as a review for students coming from Honors Algebra 2 and is an introduction to students who have not previously taken an honors level math course.

### ***Chapter 3 ~ Polynomial Curve Fitting***

This chapter is an introduction to limits and how we define some interesting phenomena in math such as indeterminate forms of an equation or undefined values of an equation. We also look at the behavior of functions as they approach values close to infinity or negative infinity. Students will be able to interpret graphs, draw functions, and use a variety of algebraic techniques to solve limits.

### ***Chapter 4 ~ Rational Functions***

In this chapter we investigate the behavior of rational functions through graphs and algebraic equations. Students are expected to be able to sketch a graph given the function and be able to find  $x$ -intercepts,  $y$ -intercepts, and define asymptotes through limits and oblique asymptotes through polynomial division.

### ***Chapter 5 ~ Polynomial Functions***

Students will learn a variety of techniques on how to work with and graph polynomial functions through roots and end behaviors. Students will also work with high order polynomial functions and be introduced to the Rational Roots Theorem and Descartes' Rule of Signs to determine the behavior of functions. In addition, students will work with projectile motion problems and modeling through functions.

### ***Chapter 6 ~ Logarithmic and Exponential Functions***

Students will begin working with the algebraic techniques involving exponential functions and reviewing the rules of exponents. Students will solve and be able to graph exponential functions given an equation and model real world phenomena. Students will investigate exponential growth and decay and develop a limit equation defining the value of  $e$ . With logarithmic equations students will spend time working with and manipulating equations to solve different problems. A wide variety of application problems will be used where students must relate logarithmic and exponential equations.

Exams to follow each specific unit. Final Exam in December to cover all 6 chapters

## **SPRING SEMESTER**

### **Chapters 7 - 9 ~ Trigonometry**

Students will begin with a review of right triangle trigonometry and the Law of Sines and Law of Cosines. In addition, students will use special right triangles to develop the Unit Circle and begin to understand the relationships between the values of sine and cosine to the graphs of sine and cosine. In extension activities, students will be able to graph the six trigonometric equations applying different transformations. Once students have a solid foundation of the building blocks of trigonometry, we will be able to solve and establish relationships through trigonometric equations. Students will be able to find both particular and general solutions to equations and find exact solutions through sum and difference formulas, double, and half angle formulae.

### **Chapter 10 ~ Derivatives**

Students will begin by relating Average Rate of Change equations to the definition of a derivative through limits and develop an understanding of how a derivative is found algebraically. Students will then be asked to find derivatives by basic rules, including: Power, Constant, Product, Quotient, Chain, and exponential and logarithmic derivatives. Students will also be able to determine the graph of a derivative given an original function.

### **Chapter 11 ~ Parametric & Polar Equations**

This chapter introduces students to different equations using different plane. Students will be able to graph and apply these topics to real world applications as well as build a foundation for BC Calculus.

Exams to follow each specific unit. Final exam in May to cover all 11 chapters.