

# Precalculus 2nd Semester Syllabus

**Instructor:** Mr. Byers

**Meeting Times and Location:** Room 265, M-F, 1:21-2:09 (6th period) and 3:07-3:55 (8th period)

**Office Hours:** M-F 7:30 am- 8:00 am, or by appointment.

## **Course Description**

This is the second half of the Pre-AP Precalculus course and follows the first semester which focused on trigonometry and vectors. Topics for this semester include but are not limited to function basics, exponential, logarithmic, power, polynomial, rational, step, trigonometric functions, piecewise functions, parametric equations, conic sections, sequences and series, and operations on functions such as composition and inverse.

The semester is broken up into two halves. This first half begins by taking a more detailed look at functions than students have previously seen in mathematics courses and developing a more rigorous foundation and understanding of the associated concepts, such as Domain, Codomain, Slope, Distance, among others. A brief introduction to concepts such as limits, continuity, and derivatives will also be discussed paving the way for future mathematics. The first half concludes with a more detailed and rigorous look at graphing than students received in previous courses and again lays a firm foundation for later mathematical instruction. Some of the topics covered include polynomial functions, exponential and logarithmic functions, step functions, piecewise functions and all their graphs.

The second half of the semester begins with an exploration of the binomial theorem, sequences and series and other related topics. The course will then primarily focus on a detailed and thorough analysis of analytic geometry, particularly through conic sections. Here the emphasis is on connecting to previous material and developing fundamental skills useful for later courses. The second half concludes with an expanded look at rational functions and exponential and logarithmic functions.

## **Textbooks**

All materials will be provided to students, however students will need to be able to access Openstax Precalculus for many assignments.

Much of the class will also incorporate problems and materials from *Analytic Conics* by Barry Spain.

*Basic Mathematics* by Serge Lange will also be heavily referenced during the more rigorous formulations of the course, particularly in connection to functions and our understanding of them.

## **Grading**

Each 9 weeks students will receive a grade covering that portion of the class on a 100 point scale with appropriate and standard letter grading. A student's grade in the course is the average of those two grades and (if taking dual credit) their scores on the midterm and final, each representing (to be determined) percent.

Students will be graded weekly on the completion and quality of weekly projects. The projects will vary in scope and assignment make up, but work may include short essays from a writing prompt, 20-40 worked problems with annotations, timed worksheets, long essays, presentations, applied graphing, diagrams, and portfolio presentations.

There are no scheduled quizzes or exams other than the midterm and the final, but the instructor reserves the right to administer tests and quizzes should they be deemed necessary. The midterm and the final are comprehensive over the course to that point and may include information from the first semester (trig). They are both closed notes, though students can utilize a notecard formulas sheet of their own design.

Midterm date: March 11th

Final date: May 3rd

## **Tentative Schedule**

January 6th - February 3rd: Functions and their operations

February 4th - February 11th: Basics of graphing and graphing skills

February 16th - March 12th: Specific graphs

March 22nd - April 9th: Sequences, Series, and Binomial Theorem.

April 12th - May 7th: Analytic Geometry

May 10th - May 14th: Further Topics in Rational Functions

May 17th - May 21st: Further Topics in Exponential and Logarithmic functions.