

# **CAPITAL HIGH SCHOOL**

## **Honors Pre-Calculus**

### **2023/2024 Course Syllabus**

**INSTRUCTOR:** Mr. Peterson Room 208  
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**MATERIALS:** **PRECALCULUS with LIMITS**  
**A Graphing Approach Seventh Edition, Ron Larson**  
**You will need a Graphing Calculator. (Classroom sets are TI-84 Plus CE)**

#### **Course Description: Pre-Calculus (Jr) (1 Credit)**

This is a junior level course that emphasizes a strong development of the ideas of Algebra II and Pre-Calculus. The course advances students' algebraic, geometric, and statistical thinking. Students from Honors Mathematics 2 or Algebra II may take this class. Students who are successful with this class should take Calculus next.

**Prerequisites:** Successful completion of Honors Mathematics 2 or Algebra II & recommendation of instructor.

#### **First Semester**

- Functions & Relations
- Inverse & Composite Functions
- Zeros of Functions
- General Transformations of Functions
- Polynomial and Rational Functions
- Asymptotes
- Continuity and End Behavior
- Complex Numbers
- Solve Rational Equations
- Solve Radical Equations
- Exponential and Logarithmic Equations
- Trigonometry
  - Radian Measure
  - Understanding of the Unit Circle and Special Angles
  - Graphing Trigonometric Functions
  - Modeling Harmonic Motion

#### **Second Semester**

- Trigonometry (Continued)
  - Trig. Identities
  - Sum & Difference Identities

- Double & Half Angle Identities
- Solving Trigonometric Equations
- Laws of Sines and Cosines
- Vectors
  - Dot & Cross Products
  - Resultant Vectors
  - Parametric Equations
  - Vector Application
- Polar Coordinates
  - Conversion to Rectangular
  - Polar Graphing
  - Trigonometric Form of a Complex Number
- Solve Systems of Equations
- Matrices
  - Addition, Subtraction, Scalar Multiplication, and Matrix Multiplication
  - Reduced Row Echelon Form
  - Inverse Matrices
  - Cramer's Rule
- Limits and Sigma Notation
- Sequence and Series
- The Derivative

## **Institutional Competencies addressed by this course:**

**Communicate effectively:** The student will read with critical comprehension; write clearly and coherently; and practice effective speaking and listening skills.

**Apply critical analysis and problem-solving skills:** The student will use acquired skills or methods to recognize, analyze, adapt, and apply critical thinking to solve problems and make informed decisions.

**Develop quantitative literacy:** The student will be able to reason analytically and quantitatively, think critically and independently about mathematical situations, and make informed decisions that involve quantitative skills.

**Apply information/technology literacy across disciplines:** The student will learn to locate needed information, managing and evaluating the extracted information and using it critically and ethically; and the student will use appropriate technology to access, manage, integrate, or create information, and/or use technology to effectively accomplish a given task.

**Develop practical skills through applied disciplinary learning:** The student will integrate knowledge from academic disciplines and applied programs of study into progressively more complex problems, projects, and standards of performance in a chosen discipline

### **Grade Breakdown:**

Tests (100 pts), Quizzes (25 pts), and class assignments (4 pts). Semester exams are worth 20% of semester grades.

**Class Rules:** The Bruin Basics (standard rules of Capital High) are posted in the classroom.

**Grading Scale:**

91 – 100 = A	78 – 79.99 = C+	62 – 67.99 = D
90 – 91.99 = A-	72 – 77.99 = C	60 – 61.99 = D-
88 – 89.99 = B+	70 – 71.99 = C-	59.99 AND BELOW = F
82 – 87.99 = B	68 – 69.99 = D+	

(The Dual Credit grade will be the average of the first semester grade and second semester grade)