



Course Syllabus

COURSE TITLE: Mathematical Analysis

PREREQUISITE: Algebra II and Trigonometry or Advanced Algebra/Precalculus

DESCRIPTION: This course is part of a sequence of advanced mathematical studies beginning with Algebra II & Trigonometry and including AP Calculus BC. The course combines concepts from Pre-Calculus and Calculus AB. The course is designed for advanced students who are capable of a more rigorous course at an accelerated pace.

MAIN TOPICS: Incorporate the use of technology when appropriate.

Review complex numbers, polynomial expressions, radicals and exponents.

Solve and graph polynomial functions and inequalities, rational, logarithmic, and exponential functions.

Identify and use trigonometric ratios, inverses, and formulas.

Solve application problems using trigonometry.

Graph the six trigonometric functions and their inverses. Prove trigonometric identities.

Apply vectors to solve problems.

Convert between rectangular equations and parametric equations. Graph polar equations and identify polar graphs.

Identify and use permutations and combinations.

Expand binomials.

Use mathematical induction in proofs.

Investigate and identify characteristics of polar equations and conic sections.

Solve real-world problems using trigonometry.

Use matrices to solve systems of equations.

Determine the continuity of a function.

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.

CREDIT INFO: This course may provide a standard unit of credit for a Standard, Standard Technical, Advanced Technical, or Advanced Studies Diploma.