



# MATHEMATICS

**REQUIREMENTS:** 3.25 credits of Math; 1 additional credit in Math and/or Science.

**ERIE BUSINESS CENTER ARTICULATION AGREEMENT:** Students can earn 3 credits when they receive a grade of B or better in Algebra 2 A or Algebra 2 H.

**EDINBORO UNIVERSITY ARTICULATION AGREEMENT:** Upon matriculation at Edinboro University of Pennsylvania, students can earn 4 credits (Math 107) when they earn an "A" or "B" in the following classes: Algebra 2 H, Geometry H, Precalculus/Trigonometry H and Calculus H or AP.

**GANNON UNIVERSITY ARTICULATION AGREEMENT:** Upon matriculation at Gannon University, students can earn 3 credits (MATH 111 or MATH 140) when they earn a B or better in the following classes: Algebra 1 H, Algebra 2 H, Geometry H, Precalculus/Trigonometry H and Calculus H or AP.

**NCAA ELIGIBILITY STANDARDS:** For Division I colleges, 3 credits of Mathematics are required. For Division II colleges, 2 credits of Mathematics are required. Approved courses are Algebra 1 or above.

**ALGEBRA 1 A**  
**ALGEBRA 1 H**

# 1424  
# 1414  
Grade level: 9  
Credit: 1.0

Algebra 1 provides the foundation for future mathematics courses. It begins the transition from the concrete reasoning of arithmetic to the abstract reasoning of higher mathematics. Students will learn to simplify algebraic expressions, and to solve and graph algebraic equations. They will also apply these skills to solving real world problems. The honors level explores topics in more depth and moves at a faster pace.

**ALGEBRA 2 A**  
**ALGEBRA 2 H**

# 3434  
# 3444  
Grade level: 10, 11  
Credit: 1.0

Algebra 2 expands on the topics studied in Algebra 1. Topics include factoring, variations and graphs, linear and quadratic relations, systems of equations, imaginary and complex numbers, powers, radicals, and radical equations. The honors level explores topics in more depth and moves at a faster pace.

Prerequisite for Algebra 2 A: "C-" in Geometry A or Department approval.

Prerequisite for Algebra 2 H: "B-" in Geometry H or Department approval.

**ALGEBRA 3 A**

# 4472  
Grade level: 12  
Credit: 0.5

Algebra 3 is a semester course that explores advanced algebraic concepts. Topics include systems of equations, quadratic equations, matrices, roots of polynomials, and graphing algebraic equations. This course will be taught in the Spring semester.

Prerequisites: "C-" in Algebra 2 and Trigonometry, or Department approval.

**CALCULUS AP**

# 5474  
Grade level: 12  
Credit: 1.0

Calculus AP is a rigorous course that follows the Advanced Placement Calculus "AB" curriculum. It includes both differential and integral calculus. Past AP exam questions will be used throughout the class so that students may gain experience and build confidence. A fee may be included for an AP test booklet. The "Calculus AB" AP exam may be taken in May 2010. The fee for this exam is approximately \$90.

Prerequisites: "B" in Algebra 2 H, Geometry H, Pre-Calculus H and Department approval.

Fee: Students will purchase their own workbooks. The cost is approximately \$ 25.

**CONSUMER MATHEMATICS**

# 4454  
Grade level: 11, 12  
Credit: 1.0

Consumer mathematics provides students with the math skills necessary for personal and career situations. Topics include computational skills, income, banking, credit, taxes, insurance, and budgeting.

Prerequisite: Informal Geometry or Geometry, or Department approval.

**EXPLORING PROBABILITY AND STATISTICS**

# 1411  
Grade level 10  
Credit 0.25

Exploring Probability and Statistics provides students with a basic introduction to these two topics. Students will collect, organize, and interpret data, and they will determine the probability and odds of random events. Real world data and activities will be used as often as possible. This is a required course for all incoming freshmen.

**GEOMETRY A**  
**GEOMETRY H**

# 2434  
# 2424  
Grade level: 9, 10  
Credit 1.0

Geometry provides an introduction to formal mathematics. Students will develop an understanding of logic and mathematical reasoning, and will apply these reasoning skills to relationships between geometric figures including points, lines, planes, triangles, polygons, and circles. They will also use these relationships and their algebra skills to solve real world problems. The honors level will explore topics in more depth, including an increased emphasis on formal proof, and will move at a faster pace.

Prerequisite for Geometry A: "C-" in Algebra 1 A or Department approval. Students earning a "D+" or lower in Algebra 1 are expected to attend a refresher course during the summer to remain in the academic program.

Prerequisite for Geometry H: "B-" in Algebra 1 H or Department approval

**INFORMAL GEOMETRY**

# 2444  
Grade level: 10  
Credit 1.0

Informal geometry emphasizes an understanding of the application of geometric theorems and postulates. Students will explore measurement and construction, angles, triangles, polygons, circles, and the surface area and the volume of three-dimensional figures.

Prerequisite: Introduction to Algebra or Algebra 1 or Department approval

**PRECALCULUS / TRIGONOMETRY H**

# 4414  
Grade level: 11, 12  
Credit: 1.0

Precalculus / Trigonometry is an advanced math course that combines the topics of College Algebra (Algebra 3), Trigonometry, and Analytical Geometry. (It is the honors level of Trigonometry and Algebra 3.) It also shows the relationships between these fields of mathematics and provides a solid foundation for the study of Calculus. Topics include functions, equations and inequalities, integers and polynomials, rational numbers and rational functions, recursion and mathematical induction, polar coordinates and complex numbers, graphs, vectors, the trigonometric functions, right triangles, graphs of trigonometric functions, fundamental identities, inverse trigonometric functions, radian measures, triangles, vectors, and analytical geometry.

Prerequisites: "B-" in Algebra 2 H or Department approval.

## **SAT/ACT PREP**

# 5422

Grade level: 10, 11, 12

Credit: 0.5

This pass/fail course helps students prepare for standardized tests such as the SAT and the ACT. The course will be divided into three sections: verbal and writing skills, math skills and science skills. The verbal/writing section familiarizes students with the various aspects of the verbal and writing sections of the SAT and ACT tests. The topics covered are: sentence completion, reading comprehension, paragraph organization, identifying sentence errors, vocabulary and timed-writing responses. The math portion of the course includes practice with gridding student-produced responses, numbers, operations, algebra, functions, geometry, measurements, data analysis, statistics, and probability. The science portion of the course will include topics from biology, chemistry, physics, and the Earth/space sciences (geology, astronomy and meteorology). Students will practice skills such as graph reading, interpretation of scatterplots, interpretation of information presented in tables, interpretation of experimental results, and analysis and comparison of alternative viewpoints or hypotheses. This course helps prepare students by teaching them strategies for standardized test taking. Although this class cannot cover all topics as thoroughly as necessary, this class will provide specialized study skills, teacher and student feedback, and daily practice. This course will be taught in the Fall semester.

Prerequisite: Algebra 2, or Geometry with concurrent enrollment in Algebra 2

Fee: Students will purchase their own SAT and/or ACT workbooks. The cost for all workbooks is approximately \$45.

## **STATISTICS H**

# 4482

Grade level: 12

Credit: 0.5

Statistics is a semester introductory course. Topics include representing data, central tendency, variation, mathematical models, experimental design, and probability. Students will be required to have a TI scientific or graphing calculator that includes statistical functions.

Prerequisite: "B-" in Algebra 2 H or Department approval

## **TRIGONOMETRY A**

# 5452

Grade level: 12

Credit: 0.5

Trigonometry is a semester course that provides an extension of many of the concepts of algebra and geometry. Although not required for all areas of study, this course would be beneficial for college-bound students interested in health, business, science, or math fields. Students will study the trigonometric functions, right triangles, graphs of trigonometric functions, fundamental identities, inverse trigonometric functions, radian measures, triangles, and vectors. This course will be taught in the Fall semester.

Prerequisite: "C-" in Algebra 2 or Department approval.