

## MATHEMATICS

**For ALL Math courses, the student must own a graphing calculator for use at home and in class. The required model is a Texas Instrument TI83, TI83+, TI84, or TI84+. Any other model must be approved by the math department chairperson before beginning the course.**

**404 PRE-ALGEBRA All year 1 Credit 9**

**Prerequisite: Placement by entrance exam and elementary school grades.**

This course is designed to prepare students to take Algebra 1-C or Algebra 1-A in their sophomore year. Students will extensively review whole numbers, fractions, decimals, proportions, per cents, and measurement. Students will then study basic concepts from algebra: integers, evaluating expressions, and solving equations.

**412 ALGEBRA I-C All year 1 Credit 9, 10**

**Prerequisite: Placement by entrance exam and elementary school grades.**

Major topics in Algebra are covered, including algebraic notation, solving equations, factoring, simple graphing, and the solution to word problems. There is also extensive review of basic arithmetic skills including fractions, decimals, and per cents.

**416 ALGEBRA I-A All year 1 Credit 9,10**

**Prerequisite: Placement by entrance exam and elementary school grades.**

This course introduces the fundamental properties of the real number system and practice in deductive reasoning. Algebraic notation, graphing, algebraic manipulations including factoring, operations with radicals, and solving of equations and inequalities are covered. These techniques are also applied to the solution of word problems.

**418 ALGEBRA I HONORS All year 1 Credit 9**

**Prerequisite: Placement by entrance exam and elementary school grades.**

This course includes variables, numbers on a number line, graphing, working with real numbers (both rational and irrational), and solving equations and inequalities, including word problems and other applications. Arithmetic manipulation of polynomials, factoring, and algebraic fractions are all covered extensively, with considerable work applying these in problem solving situations. Linear and quadratic functions are analyzed and explored with a TI83+ graphing calculator.

**426 GEOMETRY A All year 1 Credit 10, 11**

**Prerequisite: Requires successful completion of Algebra I and instructor approval, based on previous Math level and grade.**

**Note: Students from both the classes of 2011 and 2012 may take this course in the 2009-2010 school year.**

This course for both sophomores and juniors acquaints the student with the fundamental properties of plane and solid Euclidean geometry, as well as some trigonometry of right triangles. It continues to develop the student's ability to reason logically and to write deductive proofs.

**428 GEOMETRY HONORS All year 1 Credit 10, 11**

**Prerequisite: Requires successful completion of Algebra I and instructor approval, based on previous Math level and grade.**

**Note: Students from both the classes of 2011 and 2012 may take this course in the 2009-2010 school year.**

This geometry course for both sophomores and juniors is designed for students of above average mathematical ability. It presents the fundamental properties of Euclidean geometry, teaches the logical writing of proofs, and teaches topics from solid and coordinate geometry, as well as some trigonometry of right triangles.

**436 ALGEBRA II-A All year 1 Credit 10, 11**

**Prerequisite: Requires successful completion of Algebra I and instructor approval, based on**

previous Math level and grade.

**Note: This course will not be offered in the 2009-2010 school year. Students from the class of 2012 may take this course in the 2010-2011 school year.**

This course for juniors and sophomores is geared toward the average student who is planning to attend college. It reviews the topics of Algebra I in greater detail and then develops new topics, including arithmetic with radicals and imaginary numbers, rational exponents, quadratic equations and inequalities, extensive work with functions, systems of equations, and conic sections.

**438 ALGEBRA II HONORS All year 1 Credit 10, 11**

**Prerequisite: Requires successful completion of Algebra I and instructor approval, based on previous Math level and grade.**

**Note: This course will not be offered in the 2009-2010 school year. Students from the class of 2012 may take this course in the 2010-2011 school**

This course for juniors and sophomores includes the same topics as course Algebra II-A, plus sequences, series, exponential functions, and logarithmic functions. All topics are covered in enough detail and with sufficient rigor that they can be easily applied to Calculus. **year.**

**442 PROBABILITY AND STATISTICS Semester ½ Credit 12**

**Prerequisite: Requires successful completion of Algebra I and instructor approval, based on previous Math level and grade.**

This is a one-semester course designed for students with little or no previous experience with statistics and probability. It includes various types of graphs, mean, median, mode, range, percentiles and quartiles, tree diagrams, various counting techniques, compound events, conditional probability, the binomial distribution, standard deviation, the normal distribution, correlation, and the use of statistical calculators.

**443 TRIGONOMETRY A Semester ½ Credit 12**

**Prerequisite: Requires successful completion of Geometry and Algebra II, and instructor approval, based on previous Math level and grade.**

This one-semester course covers the basic trigonometry needed for most advanced math classes and scientific applications. (It is designed for students who want to take another technical math course, but do not meet the prerequisites for Pre-calculus or do not have room in their schedules to take it.) It includes a review of right triangles, right triangle trigonometry, uses of trigonometry tables and calculators, laws of sines and cosines, circle trigonometry, trigonometric graphs, trigonometric equations, and polar coordinates.

**444 PRE-CALCULUS 1 (HONORS) Semester ½ Credit 12**

**Prerequisite: Requires successful completion of Algebra II-A or Algebra II Honors, and instructor approval, based on previous Math level and grade.**

This one-semester honors trigonometry course provides extensive work in trigonometry needed for more advanced math classes and scientific applications. It includes right triangle trigonometry, uses of trigonometry tables and calculators, circle trigonometry, trigonometric graphs, trigonometric identities with 1 or 2 variables, laws of sines and cosines, trigonometric equations, polar coordinates, and parametric equations. Students taking Calculus must also take this course concurrently in the first semester, unless they have previously taken it.

**449 PRE-CALCULUS 2 (HONORS) Semester ½ Credit 12**

**Prerequisite: Requires successful completion of Algebra II-A or Algebra II Honors, and instructor approval, based on previous Math level and grade.**

In a challenging and comprehensive way, this one-semester honors course explores analytical geometry, exponential functions, and logarithms.

**CALCULUS HONORS**

All year

1 Credit

12

**Prerequisite:** Requires successful completion of Algebra II Honors or Pre-Calculus 1 and Pre-Calculus 2, and instructor approval, based on previous Math level and grade.

This course is intended for students who have already completed Pre-Calculus or who have completed Algebra II Honors and are taking Pre-Calculus during the first semester. It includes all topics in the Advanced Placement AB Calculus syllabus. It presents a treatment of functions, limits, continuity, derivatives and their applications, and integrals and their applications.

**450 AP CALCULUS**

**Note:** All students in this course are required to take the AP Calculus AB Test near the end of the course in May. *There is an AP Test fee.*

**458 PACC CALCULUS**

**Additional Prerequisite:** Senior standing, with a cumulative GPA of 3.0 or better and a score in (at least) the 50<sup>th</sup> percentile on the PLAN test.

**Note:** If the student earns at least a C in this class she earns 4 credits through the St. Mary's University, Winona, MN, PACC program. Registration with St. Mary's will be completed in August and a tuition payment of \$60 per credit (total \$240 for this course) is to be made in full at this time. Checks covering your tuition must be made payable to St. Mary's University, and returned with the registration material to your teacher. *While this course may be used to fulfill a Maria H.S. graduation requirement, some colleges may not accept it for college credit. Please consult your counselor for further information.*

**MATH PLACEMENT COURSE****454 CATAPULT/SYLVAN MATH SUPPORT**

All year

1 Credit

9,10

**Prerequisite:** Placement by standardized exam scores and Title One eligibility.

**Note:** This course is ADDITIONAL and does NOT count toward fulfilling Math requirements.

Catapult/Sylvan Math Support is operated through Title One funds and is geared towards students who test below the 40th percentile on the entrance exam. Catapult teachers use the program mandated by the Catapult Learning Centers, including computer programs, handouts, and lesson books. The focus is to develop mathematical and analytical skills. Students take Catapult Learning Center tests.