

## 500 MATHEMATICS

The mathematics courses offered at Newark Catholic High School are designed to challenge students at every ability level. Accordingly, students are expected to take courses appropriate to their ability.

In accordance with the standards set by the National Council of Teachers of Mathematics, it is recommended that all students, regardless of post secondary plans, complete Algebra 2 or Algebra 2 with Trigonometry. Four years of mathematics is strongly recommended.

In general, the material in the mathematics classes is presented in a lecture-discussion format, supplemented with cooperative learning, technology, and manipulative activities. Emphasis is placed on completion of homework, practical applications, and, where possible, the interrelationship between mathematics and the physical sciences.

All students enrolled in a math class are required to have a Texas Instruments graphing calculator. Model numbers will be provided by the math teacher.

Students should pay particular attention to prerequisites for courses, as they will be strictly observed. Admission to math courses are determined by the Math Department and Guidance Department.

<u>Grade</u>	<u>Course</u>	<u>Title</u>	<u>Credit</u>
9	502	Algebra I - Block	1
9, 10	511	Algebra I	1
10, 11	522	Geometry	1
9, 10, 11	523H	Honors Geometry	1
10, 11, 12	531	Algebra II	1
10, 11, 12	532	Algebra II / Trigonometry	1
12	536	Mathematical Applications	1/2
11, 12	538	Statistics and Probability	1/2
11, 12	540	Pre-Calculus	1
12	541	Calculus	1

### Arithmetic Proficiency Test

The math department feels that it is important to maintain basic skills while students are furthering their advanced skills and problem-solving abilities with the high school curriculum. During **each grading period** that a student attends Newark Catholic, they will be responsible for taking an arithmetic proficiency test in their math class. The test consists of 15 arithmetic questions (add, subtract, multiply, divide with whole numbers, decimals, and percents). The student is required to work toward a minimum of 12 out of 15 questions correct. If this is not achieved during the class administration of the test, the student will have three additional opportunities to take the test during the remainder of the grading period (scheduled on their own time outside of class with the teacher) to achieve the minimum of 12 out of 15 questions correct. The grade is entered as a test score for the quarter, and the value of this score is dependent on whether the student passed on the first attempt, second attempt, etc., or did not pass after four attempts. Review materials are made available to the students throughout the year for practice.

### Prerequisites for Double Scheduling Math

The Algebra I teacher recommends students for double scheduling math based on grades through the end of semester one. These students are determined by: an “A” in Algebra; an “A-” student can be recommended by a teacher if they feel this student is appropriate for the program.

All students scheduled in double math their sophomore year are automatically placed in Honors Geometry and Algebra II/Trig. These students have first priority in being placed in Honors Geometry. The students involved in the 8th grade Algebra program will have second priority in placement into Honors Geometry with the recommendation of the instructor.

Due to limits of space, there is a selection process to fill the rest of the Honors Geometry. Students are filled in a letter grade at a time until the course is filled. For example, if they will fit, all of the “B+” students can choose to go into the course. If all of the students in a particular “grade class” do not fit into the section, the following will be used to determine the students selected: full GPA, standardized math scores, determination of the current math instructor.

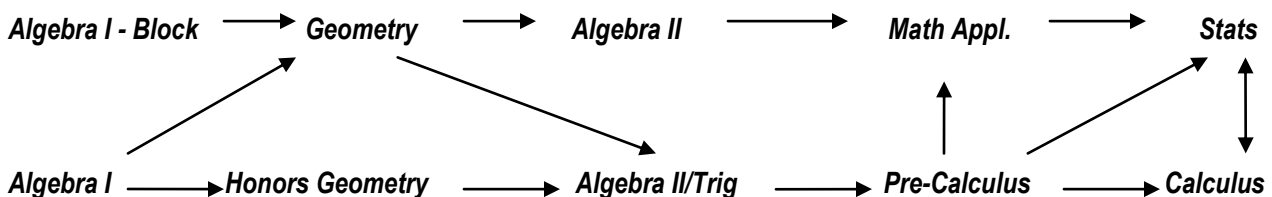
Students enrolled in either Honors Geometry or Geometry will be able to schedule for Algebra II/Trig if their grades are sufficient and the teacher recommends it.

### Prerequisites for Incoming Freshmen to take Honors Geometry

- Student has taken and successfully completed an Algebra I class in the eighth grade that has been taught by a certified Algebra teacher following the Diocesan Course of Study
- Student takes and passes the Algebra Achievement Test with a score of at least 85%. This test is supplied by the Diocese Department of Education and is required to be taken by all students attempting to successfully complete a high school Algebra I requirement as an eighth grader

The student will be required to take Algebra I as a freshman if **both** prerequisites are not met. This applies to both incoming public and private school students. Algebra Achievement Test will be administered at Newark Catholic at a date to be determined in May.

### SEQUENCE OF STUDY



**502 Algebra I - Block** 1 credit  
(full year) 2 class periods 9  
Prerequisites: **Admission determined by the Guidance Department**

**Admission determined by the Guidance Department**

Beginning in the 2012-2013 school year, the Ohio Department of Education in conjunction with the new national Common Core is expecting all high school students to take Algebra 1 or higher as their entry-level course. *Algebra 1 – Block* will schedule students two periods per day of Algebra 1. This will provide additional time to reinforce concepts and bring students up to grade level in mathematics.

Deductive reasoning will be taught through work with polynomials and problem solving. Topics will include: graphing and solving linear and second-degree equations and inequalities; graphing and solving linear and second-degree systems; rational and irrational numbers; and polynomial operations.

**511 ALGEBRA I** 1 credit  
(full year) 9,10  
Prerequisites: Completion of Integrated Math  
**Admission determined by the Guidance Department**

Deductive reasoning will be taught through work with polynomials and problem solving. Topics will include: graphing and solving linear and second-degree equations and inequalities; graphing and solving linear and second-degree systems; rational and irrational numbers; and polynomial operations. Required of all freshman with the exception of those placed in Algebra I - Block.

**522 GEOMETRY** 1 credit  
(full year) 10,11  
Prerequisites: Algebra I  
**Admission determined by the Math Department**

The basic concepts of Euclidian geometry are introduced by relating geometry to algebra through the coordinate plane. Topics covered include: congruence, similarity, area, volume, transformational and coordinate geometry, and right triangle trigonometry. The emphasis of this course is the strengthening of algebraic skills through geometry.

**523H HONORS GEOMETRY** 1 credit  
(full year) 9,10  
Prerequisites: Algebra I  
**Admission determined by the Math Department**

The basic concepts of Euclidian geometry are introduced. Written formalization of deductive reasoning is taught through geometric proof. Topics covered include: congruence, similarity, area, volume, transformational and coordinate geometry, and right triangle trigonometry. The emphasis of this course is deductive and inductive reasoning.

**531 ALGEBRA II** 1 credit  
(full year) 11, 12  
Prerequisites: Geometry  
**Admission determined by the Math Department**

This course will review and extend the algebraic concepts from Algebra I and Geometry. Topics include: linear, quadratic, rational and polynomial equations and inequalities; functions; irrational and complex numbers; and graphing techniques. The emphasis of the course is on the solidification of the skills of deductive reasoning.

**532 ALGEBRA II / TRIGONOMETRY** 1 credit  
(full year) 10,11,12  
Prerequisites: Geometry “B” average or higher; Honors Geometry “C” average or higher  
May be taken concurrently with Honors Geometry if student qualifies for double scheduling  
**Admission determined by the Math Department**

This course will briefly review the algebraic concepts from Algebra I and Geometry, and will extend them to include linear, quadratic, rational and polynomial equations and inequalities; functions; irrational and complex numbers; discrete mathematics; analytic geometry; graphing techniques; and a thorough treatment of trigonometry.

**536 MATHEMATICAL APPLICATIONS** 1/2 credit  
(1 semester) 12  
Prerequisites: Algebra II or Algebra II with Trigonometry with below “C” average  
**Admission determined by the Math Department**

Students will be reviewing topics covered in previous high school math courses. Topics include: Elementary algebra, intermediate algebra, coordinate geometry, plane geometry and trigonometry. The goal of the course is to prepare students for the ACT.

**538 STATISTICS AND PROBABILITY** 1/2 credit  
(1 semester) 11/12  
Prerequisites: Algebra II; Algebra II / Trigonometry  
**Admission determined by the Math Department**

This elective course will introduce students to the language and symbolism of statistics. Topics will include: counting principles; permutations and combinations, conditional probability; randomness; graphical representations of data; central tendency and variability; normal distribution; confidence intervals and hypothesis testing. The focus will be on conceptual understanding and clear representation of statistical data.

**540 PRE-CALCULUS** 1 credit  
(full year) 11/12  
Prerequisites: Algebra II/Trigonometry “C” average or higher  
**Admission determined by the Math Department**

This course will explore the interrelationships between geometry and algebra. Topics will include: concepts of functions, circular and trigonometric functions, analytic geometry, nonlinear graphing, polar graphics, complex numbers, series and sequences, and an introduction to statistics.

**541 CALCULUS** 1 credit  
(full year) 12  
Prerequisites: Pre-Calculus “C” average or higher  
**Admission determined by the Math Department**

This course is designed to show the relationships between functions, graphs, and limits, and how they relate to Differential and Integral Calculus. Topics include: deriving formulas for the derivative of various functions, evaluating finite and infinite limits, expressing answers and ideas graphically, and developing integral formulas. This class is designed to expand on Pre-Calculus knowledge and show how Calculus is formed on those principles. Approved for dual enrollment credit at Ohio Dominican University.