

MATHEMATICS2016-2017

| <u>Freshman</u> | <u>Sophomore</u> | <u>Junior</u> | <u>Senior</u> |
|-----------------|-------------------|-------------------|-------------------|
| Basic Math | Pre-Algebra | Algebra I | Saxon Algebra II |
| Pre-Algebra | Algebra I | Saxon Algebra II | Geometry |
| Algebra I | Saxon Algebra II | Geometry | Honors Geometry |
| Honors Geometry | Geometry | Honors Geometry | Honors Algebra II |
| | Honors Geometry | Honors Algebra II | Advanced Math |
| | Honors Algebra II | Advanced Math | Algebra III |
| | Business Math | Algebra III | College Algebra |
| | | College Algebra | Pre-Calculus |
| | | Pre-Calculus | Calculus |
| | | Business Math | Business Math |

Students who fail a math class or who do not meet the prerequisite grade for advancement to the next level may attend summer school or take a correspondence course to receive credit. However, they must pass the Notre Dame semester exam for the failed course before advancing to the next level.

701 Basic Math (1) 2 sem. 1.0 cr.
(Placement through math teacher or counselor)

This course reviews addition, subtraction, multiplication, division of integers, fractions, mixed numbers and decimals. Students will develop problem-solving skills. The concepts of area, percent, ratio and order of operations are also introduced.

725-726 Pre-Algebra (1,2) 2 sem. 1.0 cr.
(Placement through math teacher or counselor), signature of previous course instructor

Pre-Algebra continues the study of operations with integers, fractions, mixed numbers and decimals. Students will develop problem-solving skills. The concepts of area, percent, ratio, order of operations and the beginning concepts of algebra are introduced. Teacher's signature is required before advancement to the next level.

721-722 Algebra I (1,2,3) 2 sem. 1.0 cr.
Prerequisites: 1) Qualifying score on Math Placement Test and 8th grade teacher recommendation OR 2) Pre-Algebra teacher recommendation, signature of previous course instructor

Algebra is the branch of mathematics that uses positive and negative numbers, letters and other symbols to express and analyze the relationship between concepts of quantity in terms of formulas and equations. Some major topics taught are: fundamental operations of real numbers, equations and inequalities, polynomials, products and factoring, fractions, graphs, quadratic equations and problem-solving.

711-712 Saxon Algebra II (2,3,4) 2 sem. 1.0 cr.
Prerequisites: Algebra I and signature of previous course instructor

Saxon Algebra II continues the study of mathematics using the approach of John Saxon. This course is specifically designed for those students who do not continue in the traditional method of mathematical study (*i.e.*, Honors Geometry and Honors Algebra II). More topics in algebra and geometry are explored. A student cannot receive credit for both Saxon Algebra II and Honors Algebra II.

727-728 Geometry (2,3,4) 2 sem. 1.0 cr.
Prerequisites: Algebra I and signature of previous course instructor

Geometry is a course designed to help the student understand the structure of a mathematical system and to appreciate the basic structure of Euclidean geometry. Core topics include an introduction to direct and indirect proof, congruence, similarity, constructions, parallel lines, quadrilaterals, circles, area and volume. This course is specifically designed to focus on the core principles of Geometry and would not be at the same pace as the traditional course that is Honors Geometry. A student cannot receive credit for both Geometry and Honors Geometry.

- 719-720 Honors Geometry (1,2,3,4) 2 sem. 1.0 cr. Weighted
Prerequisites: 1) Qualifying score on Math Placement Test and 8th grade math teacher recommendation OR 2) Algebra teacher recommendation and signature of previous course instructor
 Honors Geometry is a traditional geometry course. It is designed to help the student explore the structure of a mathematical system and to appreciate the structure of Euclidean geometry. Topics include direct and indirect proof, congruence, similarity, constructions, parallel lines, quadrilaterals, circles, area and volume. A student cannot receive credit for both Geometry and Honors Geometry.
- 715-716 Honors Algebra II (2,3,4) 2 sem. 1.0 cr. Weighted
Prerequisites: Honors Geometry and/or signature of previous course instructor
 In this course, the students study the structure of the systems of real and complex numbers. Other topics include polynomials, linear equations, quadratics, exponential/logarithmic functions, sequences and series. A student cannot receive credit for both Saxon Algebra II and Honors Algebra II.
- 713-714 Advanced Mathematics (3,4) 2 sem. 1.0 cr.
Prerequisites: Saxon Algebra II or Honors Algebra II and signature of previous course instructor
 This course continues the study of mathematics using the approach of John Saxon. It is the culmination in the process of acquiring the fundamental skills of algebra, geometry and trigonometry. Students will tackle the abstractions of the concrete problems they have been working in previous math courses. A student cannot receive credit for both Advanced Math and Pre-Calculus.
- 735 Algebra III (3,4) 1 sem. 0.5 cr.
Prerequisites: Honors Algebra II or Saxon Algebra II and signature of previous course instructor
 Algebra III is an in-depth study of advanced algebra topics. Topics include equations, inequalities, variation, functions, polynomials and complex numbers. Students may not receive credit for both Algebra III and Pre-Calc.
- 733 College Algebra (3,4) 1 sem. 0.5 cr.
Prerequisites: Algebra III and signature of previous course instructor
Dual Enrollment Option: 3 hours of early college credit from Southeast Missouri State University (MA134-College Algebra); refer to dual enrollment requirements on page 3.
 This course follows the standard curriculum for a College Algebra course. Topics include polynomial, rational, logarithmic and exponential functions; equations and inequalities; conic sections, sequences and series; matrices and determinants; and probability and statistics. Students may not receive credit for both College Algebra and Pre-Calculus.
- 717-718 Pre-Calculus (3,4) 2 sem. 1.0 cr. Weighted
Prerequisites: Honors Algebra II and signature of previous course instructor
Dual Enrollment Option: 5 hours of early college credit from Southeast Missouri State University (MA137-Pre-Calculus); refer to Dual Enrollment requirements on page 3.
 This course prepares students who intend to continue their study of mathematics in the direction of natural, physical, or social sciences. Emphasis is given to trigonometry and trigonometric functions, limits, sequences, elementary functions, analytic geometry, probability and an introduction to calculus. A student cannot receive credit for both Pre-Calculus and any of the following: Advanced Math, Algebra III, or College Algebra.
- 710 Calculus (4) 2 sem. 1.0 cr. Weighted
Prerequisites: Pre-Calculus and signature of previous course instructor
Dual Enrollment Option: 5 hours of early college credit from Southeast Missouri State University (MA140-Analytic Geometry & Calculus I) or 4 hours from St. Louis University (MATH142-Calculus I); refer to Dual Enrollment requirements on page 3.
 Topics include: analytic geometry, functions, limits, derivatives and integrals of algebraic, trigonometric and exponential functions with applications.

211-212 Business Math (2,3,4) 2 sem. 1.0 cr.
Prerequisite: Placement by counselor (Also listed in Business Department)

Business Math is the study of mathematics needed in everyday life, regardless of occupation. The course provides for considerable practice in the use of a calculator. First semester topics include: money records, banking, net pay, fringe benefits, commission, metric measurements and cost of buying and owning a home and motor vehicle. Second semester topics include: taxes, insurance, saving and investing, credit, business analysis and statistics, profit and loss, and business in a global economy.

