Algebra
Algebra II w/ Trigonometry
AP Calculus AB
AP Calculus BC
AP Statistics
Calculus III
College Algebra
Geometry in Construction
Financial Algebra
Data, Probability & Statistics
Geometry
Linear Algebra
Pre-Calculus
Career Internship Program

Mathematics

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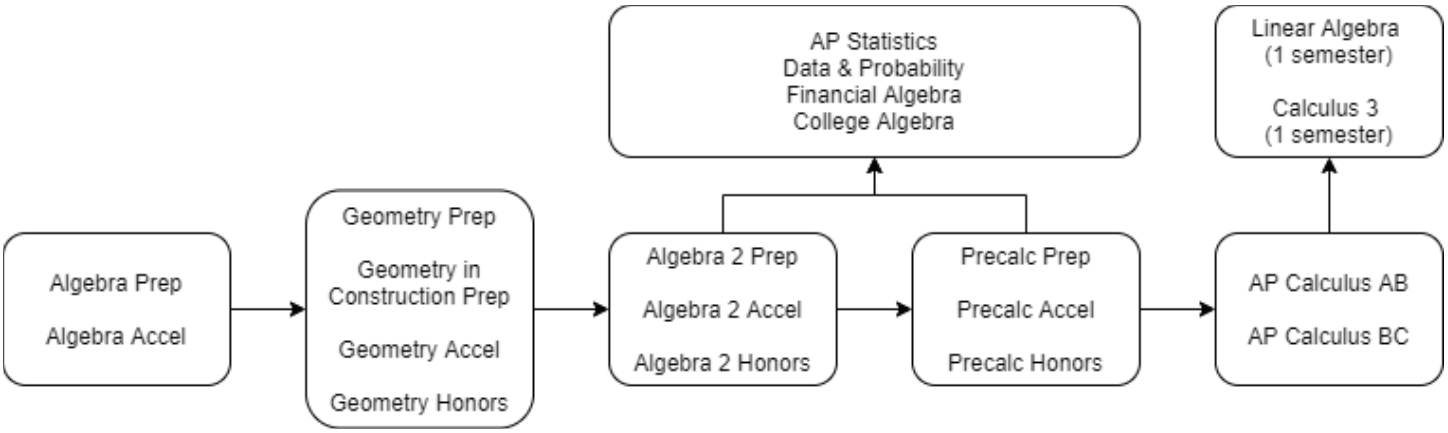
Mathematics Department Mission Statement:

To use the content of Math to develop ALL students into lifelong learners; adept at critical thinking, problem solving and collaborating.

Course Sequences



Students who successfully completed Algebra (Accel) or Geometry (Honors) in Grade 7 or 8 will receive one unit of high school credit on a pass/fail basis. The high school credit will be awarded after successful completion of one year of mathematics while enrolled in high school.

Mathematics Department Standards

The LTHS Mathematics Department has adopted the following eight principles in conjunction with both the Illinois State Standards and the Common Core State Standards. These principles and standards guide academic programs, courses and challenge students. Additionally, specific academic course standards have also been developed. These are distributed to students at the beginning of each semester or annual course.

LTHS Mathematics Principles

Common Core State Standards for Mathematical Practice

Standard I	**Make sense of problems and persevere in solving them.**
Standard II	**Reason abstractly and quantitatively.**
Standard III	**Construct viable arguments and critique the reasoning of others.**
Standard IV	**Model with mathematics.**
Standard V	**Use appropriate tools strategically.**
Standard VI	**Attend to precision.**
Standard VII	**Look for and make use of structure.**
Standard VIII	**Look for and express regularity in repeated reasoning.**

Requirements

While a minimum of three years of high school mathematics is required for graduation, many students take four years of mathematics. The state of Illinois requires each student to take an Algebra and a Geometry course for two of the three required credits. It is suggested that students who desire to attend college study requirements specific to their school of interest. Most state universities in Illinois require three years of mathematics through Advanced Algebra for unconditional admission. Pre-Calculus may also be required.

Placement

The Division Chair evaluates the performance of each incoming student. Placements is based upon the following performance indicators.

- Information from the eighth grade teacher's about the incoming freshman using current math grades and student ability.
- LT will review the results and recommend further changes based on skills and supports.

Parents are then notified of the final placement.

Incoming Freshmen

Students who are placed beyond Algebra (Accel) will receive credit for Algebra only after they successfully completed Geometry. Please note that credit will not appear on the student's transcript until the end of the second semester of sophomore year. This credit will not apply to the three years of math credit required by the state of Illinois for high school graduation, nor will the level be designated.

Calculator Requirements

All Math/Science courses require a graphing calculator. Families should only purchase a graphing calculator if they do not already own one. Please call your student's math teacher if you have any questions.

Mathematics and Advanced Placement (AP)

A student may enroll in the following mathematics AP courses:

- **AP Calculus AB**

This two-semester course is especially designed for students with interest in mathematics and/or science. Completion of this course qualifies students to take the AP Calculus AB Examination.

- **AP Calculus BC**

This two-semester course is especially designed for students with high interest in mathematics and/or science. Completion of this course qualifies students to take the AP Calculus BC examination.

- **AP Statistics**

This two-semester course is especially designed for students with an interest in an introductory, non-calculus based course in statistics. Many college majors require a statistics course. This course qualifies students to take the AP Statistics examination.

Algebra (Prep) 131/132

Credit: 1
Grade Offered: 9, 10

Level: III
Annual MA4136
MA4137

Prerequisite: None

This course intensively studies the language of algebra. Students begin their study of the real number system and its properties. The course is designed to convey an understanding of the meaning and use of variables, formulas, equations and inequalities, exponents, functions, graphs, and an introduction to probability and statistics. The fundamental processes with algebraic expressions are taught, including simple cases of factoring and work with algebraic fractions. The significance of problems and of problem solving is emphasized throughout the course. Material covered in this course will not only provide students with a foundation of algebra to be applied in future courses, but will also prepare students for college level coursework.

Algebra (Prep) 132/131 (staggered)

Credit: 1/2
Grade Offered: 9, 10

Level: III
Fall MA4936
Spring MA4937

Prerequisite: Failure of 1st semester Algebra (Prep) or Accel)

Algebra (Accel) 141/142

Credit: 1
Grade Offered: 9

Level: IV
Annual MA4146
MA4147

Prerequisite: None

This course intensively studies the language of algebra. Students begin their study of the real number system and its properties. The course is designed to convey an understanding of the meaning and use of variables, formulas, equations and inequalities, exponents, functions, graphs, and an introduction to probability and statistics. The fundamental processes with algebraic expressions are taught, including simple cases of factoring and work with algebraic fractions. The significance of problems and of problem solving is emphasized throughout the course. Material covered in this course will not only provide students with a foundation of algebra to be applied in future courses, but will also prepare students for college level coursework.

Algebra II w/Trigonometry (Prep) 231/232

Credit: 1
Grade Offered: 10

Level: III
Annual MA6236
MA6237

11, 12
Annual MA6231
MA6232

Prerequisite: Geometry

This course presents the topics contained in Algebra II w/Trigonometry and also includes the topics of polynomial functions, logarithmic functions, sequences, series, elementary probability, and rational functions. Problem solving with the graphing calculator is a major emphasis in this course.

Algebra II w/Trigonometry (Accel) 241/242

Credit: 1
Grade Offered: 9, 10

Level: IV
Annual MA7246
MA7247

11
Annual MA7241
MA7242

Prerequisite: Geometry

This course presents the topics contained in Algebra II w/Trigonometry and also includes the topics of polynomial functions, logarithmic functions, sequences, series, elementary probability, and rational functions. Problem solving with the graphing calculator is a major emphasis in this course.

Algebra II w/Trigonometry (Hon) 251/252

Credit: 1
Grade Offered: 9, 10

Level: V
Annual MA8256
MA8257

11
Annual MA8251
MA8252

Prerequisite: Geometry

This course presents the topics contained in Algebra II w/Trigonometry and also includes the topics of polynomial functions, logarithmic functions, sequences, series, elementary probability, and rational functions. Problem solving with the graphing calculator is a major emphasis in this course.

- **Independent Study** Under specific conditions as outlined on p. 25 of the **Guide**, students may make application for Independent Study. In all cases, students must secure parent, teacher, counselor, divisional, and building administration approval. Independent Study may not be taken as an 8th semester/annual course.

Geometry (Prep) 131/132

Credit: 1
Grade Offered: 10
Level: III
Annual MA5136
MA5137

Prerequisite: Algebra

In this course, we will learn about and investigate the measurements and properties of lines, planes, angles, polygons, and solids as well as their interrelationships. This class will provide you the opportunity to grow as a critical-thinker and problem-solver all while applying your pre-existing knowledge of algebra to geometric concepts. We will utilize a variety of methods of logical thinking to write the following types of proofs: 2-column, paragraph, flow, and coordinate proofs.

Geometry (Accel) 141/142

Credit: 1
Grade Offered: 9, 10
Level: IV
Annual MA7146
MA7147

Prerequisite: Algebra

In this course, we will learn about and investigate the measurements and properties of lines, planes, angles, polygons, and solids as well as their interrelationships. This class will provide you the opportunity to grow as a critical-thinker and problem-solver all while applying your pre-existing knowledge of algebra to geometric concepts. We will utilize a variety of methods of logical thinking to write the following types of proofs: 2-column, paragraph, flow, and coordinate proofs.

Geometry (Hon) 151/152

Credit: 1
Grade Offered: 9, 10
Level: V
Annual MA8166
MA8167

Prerequisite: Algebra

This course includes all the topics in Geometry (Accel) at a greater depth and faster pace. Students in this course will study coordinate geometry problems, locus problems, and various enrichment topics. Additionally, right triangle trigonometry and conics will be investigated. Material covered in this course will help prepare students for college level calculus courses.

Geometry In Construction

Credit: 2 (1 credit in Math and 1 credit in Applied Arts)
Grade Offered: 9, 10
Level: III
Annual MA1266
MA1267

Prerequisite: Algebra

Geometry In Construction is an interdisciplinary course which integrates Geometry and Technical Education topics through the building of construction projects. Geometry topics will focus on reasoning, integrating algebra in a geometric context, coordinate geometry, justification, structured argument, transformations, shape recognition and manipulation, modeling and building visual skills. Students will gain hands-on experience in areas of construction, teamwork, problem solving and STEM education.

Pre-Calculus (Prep) 331/332

Credit: 1 Level: III
Grade Offered: 11, 12 Annual MA6331
MA6332

Prerequisite: Geometry and Algebra II

This course is an extensive study of functions including trigonometric, linear, quadratic, polynomial, rational, exponential, logarithmic, and sequences. In addition, the topics of complex numbers, polar graphs, vectors, parametrics, limits, and continuity are studied. Students who complete this course with an above average grade of B or higher will be prepared for Calculus in college.

Pre-Calculus (Accel) 341/342

Credit: 1 Level: IV
Grade Offered: 11, 12 Annual MA7341
MA7342

Prerequisite: Geometry and Algebra II

This course is an extensive study of functions including trigonometric, linear, quadratic, polynomial, rational, exponential, logarithmic, and sequences. In addition, the topics of complex numbers, polar graphs, vectors, parametrics, limits, and continuity are studied. Students who complete this course with an above average grade of B or higher will be prepared for Calculus in college.

Pre-Calculus (Hon) 351/352

Credit: 1 Level: V
Grade Offered: 10 Annual MA8356
MA8357
11, 12 MA8351
MA8352

Prerequisite: Geometry and Algebra II

This course is an extensive study of functions, advanced topics in trigonometry, matrices, combinatorics, statistics, and other topics in discrete mathematics. Calculator graphing technology is incorporated into the class in order to learn mathematics from a multifaceted approach.

Linear Algebra

Credit: 1/2 | Level: V
Grade Offered: 11, 12 | Fall MA9951
Prerequisite: Successful completion of AP Calculus AB or BC

This course is the study of vectors and vector space. Topics include vectors, vector spaces, matrices, determinants, matrix algebra, linear independence, linear transformations, eigenvalues, eigenvectors, and applications of matrices and transformations. Approximately one-third of the course will involve the concept of mathematical proofs as applied to linear algebra. **Students may receive three college credits with Moraine Valley upon successful completion of this dual credit course. (Only with Calc BC credit).**

Calculus III

Credit: 1/2 | Level: V
Grade Offered: 11, 12 | Spring MA9852
Prerequisite: AP Calculus BC

This course is a one-semester post calculus course. The course covers topics in multivariable calculus. Included are vectors in two and three-dimensions, solid analytic geometry, differential calculus of several variables (including directional derivatives and gradients), and line and surface integrals. The course also includes linear algebra, a study of vector spaces in n-dimensional Euclidean space and over the complex numbers, inner product spaces, eigenvalues and eigenvectors, linear transformations, applications of vector spaces, and numerical methods. **Students may receive three college credits with Moraine Valley upon successful completion of this dual credit course.**

College Algebra (Prep)

Credit: 1 | Level: III
Grade Offered: 12 only | Annual MA6321 MA6322
Prerequisite: Algebra II w/Trigonometry (Prep)

College Algebra is designed to develop mathematical reasoning and maturity, to facilitate placement in college level mathematics, and to transition high school students to typical college grading policies. This year-long course is designed for high school seniors who have taken a course comparable to Intermediate Algebra. The curriculum will be similar to that of MATH 0465 offered at the College of DuPage.

Data, Probability & Statistics

Credit: 1/2 | Level: III
Grade Offered: 12 | Fall MA6341 Spring MA6342
Prerequisite: Algebra II with Trigonometry

This course is for students who want to apply probability to real life events and data analysis to explore random processes. Topics covered will include: graphical displays, data analysis, modeling of random events, conditional probability, discrete probability, normal probability, expected value, binomial and geometric probability, and counting. Questions of investigation may include: How can we base decisions on chance? How can probability be used to simulate events and to predict future happenings? What are the benefits of simulating events as opposed to gathering real data? What basic statistics help me better understand the world?

Financial Algebra

Credit: 1/2 or 1 | Level: III
Grade Offered: 12 | Fall MA6311 Spring MA6312
Prerequisite: Algebra I and 1 Semester of Geometry (Prep)

Financial Algebra is a study of algebra and functions in a financial context. This course combines algebraic and graphical approaches with practical business and personal finance applications. This course encourages students to be actively involved in applying mathematical ideas to their everyday lives.

AP Statistics

Credit: 1 Level: V
Grade Offered: 11, 12 Annual MA9451
MA9452

Prerequisite: Algebra II

This course is an introductory course in college level statistics. Most college majors and most careers including education, health care, business, engineering, and the social sciences all require knowledge of statistics. Successful completion of this course prepares students for the AP Statistics exam. Course topics include: descriptive statistics, linear regression, design of experiments, an in depth study of probability, and 10 weeks of inferential statistics, including hypothesis tests and confidence intervals. Strong writing skills are as important as strong algebra skills to succeed.

AP Calculus AB

Credit: 1 Level: V
Grade Offered: 11, 12 Annual MA9551
MA9552

Prerequisite: Precalculus (Honors or Accel) or Pre-Calculus (Prep) with an A or B

AP Calculus AB is primarily concerned with developing the student's understanding of the concepts of calculus: Functions, graphs and limits, derivatives, and integrals. The course emphasizes a multi-representational approach to calculus with concepts, results, and problems being expressed geometrically, numerically, and verbally. Technology is used regularly by students and teachers to reinforce different representations of functions, to confirm written work, to implement experimentation, and to assist in interpreting results. AP Calculus AB is the equivalent of a semester of college calculus. Students who take this course should plan to take the AP Calculus AB Exam.

AP Calculus BC

Credit: 1 Level: V
Grade Offered: 11, 12 Annual MA9651
MA9652

Prerequisite: Pre-Calculus (Honors) or Precalculus (Accel) with an A or B

AP Calculus BC is primarily concerned with developing the student's understanding of the concepts of calculus: Functions, graphs and limits, derivatives, integrals, slope fields, and infinite series with its methods and applications. The course emphasizes a multi-representational approach to calculus with concepts, results, and problems being expressed geometrically, numerically, and verbally. Technology is used regularly by students and teachers to reinforce different representations of functions, to confirm written work, to implement experimentation, and to assist in interpreting results. AP Calculus BC is the equivalent of two semesters of college calculus. Students who take this course should plan to take the AP Calculus BC Exam.

Career Internship Program

Credit: 1/2 (dc) Level: IV
Grade Offered: 11, 12 Fall MA5551
Spring MA5552
Summer MA5558 MA5559

This course is designed for the career-minded student who is seeking work experience in an area that the student wishes to pursue upon graduation or after attending college. The student will apply for the internship through the department that they wish to receive credit. The student will work a minimum of 90 hours during the semester for credit for the course. The student will have weekly contact with the supervising teacher, develop a culminating project based upon the experience, be evaluated by the supervising teacher and the employer for the final grade. The student is responsible for their own transportation to and from the work place.
This course may be taken for duplicate credit. It is the sole discretion of each department team to recommend the student for a work internship. Application does not guarantee admission.

Mathematics Classes

When choosing Annual Courses, you will need the first and second semester codes.

Freshman Courses

Annual

MA4136/7	Algebra Prep 131/132
MA4146/7	Algebra Accel 141/142
MA7146/7	Geometry Accel 141/142
MA8166/7	Geometry Honors 151/152
MA1266/7	Geometry In Construction

Sophomore Courses

Annual

MA4146/7	Algebra Accel 141/142
MA4136/7	Algebra Prep 131/132
MA6236/7	Algebra II w/Trig Prep 231/232
MA7246/7	Algebra II w/Trig Accel 241/242
MA8256/7	Algebra II w/Trig Honors 251/252
MA5136/7	Geometry Prep 131/132
MA7146/7	Geometry Accel 141/142
MA8166/7	Geometry Honors 151/152
MA1266/7	Geometry In Construction
MA8356/7	Pre-Calculus Honors 351/352
MA7341/2	Pre-Calc Accel 341/342

Staggered Semester

Fall only

MA4936	Algebra Prep 132 (staggered)

Spring only

MA4937	Algebra Prep 131 (staggered)

Junior and Senior Courses

Annual

MA4136/7	Algebra Prep
MA6231/2	Algebra II w/Trig Prep 231/232
MA7241/2	Algebra II w/Trig Accel 241/242
MA9551/2	AP Calculus AB
MA9651/2	AP Calculus BC
MA6331/2	Pre-Calculus Prep 331/332
MA8351/2	Pre-Calculus Honors 351/352
MA7341/2	Pre-Calculus Accel 341/342
MA9451/2	AP Statistics
MA6321/2	College Algebra (Senior only)

Fall or Spring

MA5551/2	Career Internship
MA6311/2	Financial Algebra
MA6341/2	Data, Probability & Stats (Senior only)

Fall only

MA9951	Linear Algebra

Spring only

MA9852	Calculus III