

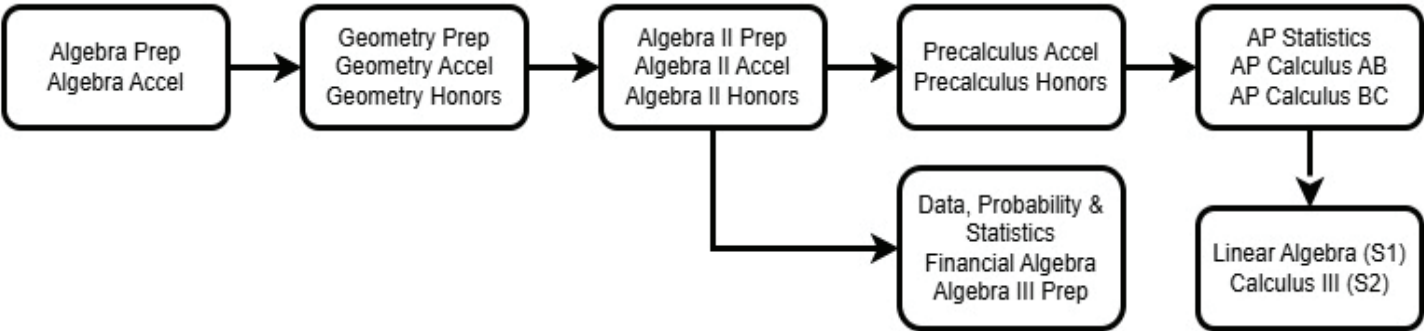
Algebra
Algebra II
Algebra III
AP Calculus AB
AP Calculus BC
AP Statistics
Calculus III
Data, Probability & Statistics
Financial Algebra
Geometry
Linear Algebra
Pre-Calculus
Career Internship Program

Mathematics

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



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 follow 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. Placement 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.

Calculator Requirements

All Math/Science courses require a Texas Instruments TI-84+ graphing calculator. Families should only purchase a graphing calculator if they do not already own one. Please check with 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:

Honors Geometry

Only students who are recommended by their middle school/junior high to take Honors Geometry as an 8th grader are awarded a grade and credit for their 8th grade Honors Geometry course. The course is taken at LTHS during first period or, by prior arrangement, the course may be offered in the student's middle school/junior high. 7th grade parents and students begin this process in the winter with their middle school principal's office.

• 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)

Credit: 1	Level: III
Grade Offered: 9, 10	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 (Accel)

Credit: 1	Level: IV
Grade Offered: 9	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 (Prep)

Credit: 1	Level: III
Grade Offered: 10	Annual MA6236 MA6237
11, 12	Annual MA6231 MA6232

Prerequisite: Geometry

This course presents the topics contained in Algebra II 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 (Accel)

Credit: 1	Level: IV
Grade Offered: 9, 10	Annual MA7246 MA7247
11	Annual MA7241 MA7242

Prerequisite: Geometry

This course presents the topics contained in Algebra II 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 (Hon)

Credit: 1	Level: V
Grade Offered: 9, 10	Annual MA8256 MA8257
11	Annual MA8251 MA8252

Prerequisite: Geometry

This course presents the topics contained in Algebra II 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)

Credit: 1 Level: III
Grade Offered: 10 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)

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

Prerequisite: Algebra (Accel) or Teacher Recommendation

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)

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

Prerequisite: Algebra (Accel) or Teacher Recommendation

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.

Pre-Calculus (Accel)

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)

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 and a 3 or higher on AP Test

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 and a 3 or higher on AP Test

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 four college credits with Moraine Valley upon successful completion of this dual credit course.

Financial Algebra

Credit: 1/2 or 1 Level: III
 Grade Offered: 11, 12 Fall MA6311
 Spring MA6312
 Prerequisite: Algebra I and 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.

Financial Algebra is not approved as a core course for NCAA eligibility.

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?

Algebra III (Prep)

Credit: 1 Level: III
 Grade Offered: 12 only Annual MA6321
 MA6322
 Prerequisite: Prerequisite: Algebra II with Trigonometry (Prep) and math PSAT score less than 510

Algebra III 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. **Students must take both semesters. Students who earn a C or better in this course are placed in credit-bearing math at the College of DuPage.**

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 experi-

mentation, 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 a student who has already secured an internship in partnership with their LT teacher in this department. Detailed information about qualifying for a Career Internship Program class can be found on page 10 of the Guide. It is the sole discretion of each department team to recommend a student for a career internship. An 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
MA4146/7	Algebra Accel
MA7146/7	Geometry Accel
MA8166/7	Geometry Honors

Sophomore Courses

Annual

MA4136/7	Algebra Prep
MA4146/7	Algebra Accel
MA7246/7	Algebra II Accel
MA8256/7	Algebra II Honors
MA5136/7	Geometry Prep
MA7146/7	Geometry Accel
MA8166/7	Geometry Honors
MA7341/2	Pre-Calc Accel
MA8356/7	Pre-Calculus Honors

Junior and Senior Courses

Annual

MA4136/7	Algebra Prep
MA6231/2	Algebra II w/Trig Prep
MA7241/2	Algebra II w/Trig Accel
MA8251/2	Algebra II w/Trig Honors
MA9551/2	AP Calculus AB
MA9651/2	AP Calculus BC
MA7341/2	Pre-Calculus Accel
MA8351/2	Pre-Calculus Honors
MA9451/2	AP Statistics
MA6321/2	Algebra III (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
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Spring only

MA9852	Calculus III
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