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Course Code Contains:

Department: Mathematics

Grade: -Please Select-

COURSE TITLE KEY

☐ Ⓨ - Year-long course: scheduled for both 1st and 2nd semester
☐ Ⓢ - Semester-long course: scheduled for 1st or 2nd semester
☐ ① - Semester-long course: scheduled for 1st semester only
☐ ② - Semester-long course: scheduled for 2nd semester only

☐ Ⓐ - Advanced Placement (AP) course
☐ Ⓒ - Meets Consumer Education Requirement
☐ Ⓓ - Dual credit course
☐ Ⓝ - NCAA eligibility course: NCAA-approved core course
☐ Ⓟ - Project Lead the Way engineering course

Print All   Print Selected   Clear Selected

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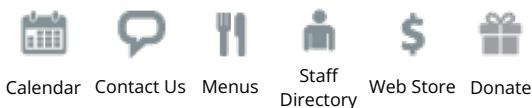
2 Credits	Pathway to Honors

Prerequisite: None

Students will make connections between verbal, numeric, graphical and algebraic representations of functions. The course focuses on linear and quadratic functions and equations. Additional topics include exponential growth and decay, operations on polynomial expressions, and solving systems of linear equations.

2 Algebra Ⓨ Ⓝ

MA0262	Grades 10, 11, 12	2023-2024

2 Credits	Pathway to Honors

Prerequisite: Geometry; recommend grade of C or better in Geometry and 1 Algebra course

Students will study advanced algebra topics, including complex numbers, logarithms, polynomials, probability, rational expressions and conics. A graphing calculator is required. This code for the course is restricted to students who identify as Latinx, all genders.

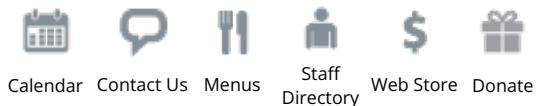## 2 Algebra Ⓨ Ⓝ

MA0252, MA2ALS	Grades 10, 11, 12	2023-2024

2 Credits	Pathway to Honors

Prerequisite: Geometry; recommend grade of C or better in Geometry and 1 Algebra course

Students will study advanced algebra topics, including complex numbers, logarithms, polynomials, probability, rational expressions and conics. A graphing calculator is required.

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Prerequisite: Geometry

Students will have additional practice on algebraic concepts. They will have extra time to explore algebraic topics for further understanding.

Advanced 2 Algebra Honors ⓨ ⓝ

MA0273 Honors	All Grades	2023-2024
2 Credits		Honors

Prerequisite: Adv Geometry H; Department Chair Recommendation

Students will study advanced algebra topics from 2 Algebra in depth as well as topics like matrices and transformations, with an emphasis on functions and graphing. A graphing calculator is required.

Advanced Geometry Honors ⓨ ⓝ

MA0223 Honors	Grades 7, 8	2023-2024
2 Credits		Honors

Prerequisite: 1 Algebra; recommend grade of B or better in 1 Algebra

Students will use algebra in a geometric context, problem solve and write original justifications.This geometry course takes a deep look at complex, multi-step problems, and abstract concepts.

Advanced Topics in Mathematics ⓨ ⓝ

MA0815	Grades 11,12	2023-2024
2 Credits		Advanced Placement

Prerequisite: MV/LA or Concurrent Enrollment in MV/LA with department recommendation

Students will increase their abilities to produce mathematically rigorous arguments, write proofs and solve interesting problems. This college-level class covers topics that vary from year to year. Past topics include number theory, combinatorics, graph theory, topology, real analysis, abstract algebra and differential equations. A graphing calculator is required.

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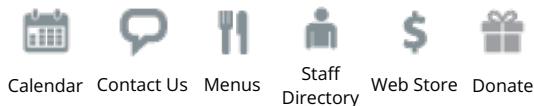
Prerequisite: None

Students will gain a deeper understanding of both Algebra and Coding by infusing our Algebra instruction with programming. Algebra in Coding is a contextual course that integrates Algebra topics within the context of programming a video game. The course focuses on linear and quadratic functions and equations. Additional topics include exponential growth and decay, operations on polynomial expressions, and solving systems of linear equations. This is done amidst computer science concepts including contracts, data types, testing, and code reviews. Each algebra topic presents an opportunity to learn to code a part of the final project video game. Students will also make connections between verbal, numeric, graphical and algebraic representations of functions, while strengthening pattern identification, critical thinking and attention to detail. This course meets for one (1) block.

Algebra in Entrepreneurship Ⓨ Ⓝ

ALGENR	All Grades	2023-2024
4 (2 CTE, 2 Math) Credits		Pathway to Honors

Prerequisite: None

Students will gain a deeper understanding of both Algebra and Entrepreneurship by infusing numeracy instruction with project-based learning in a real-world context. Algebra in Entrepreneurship is an interdisciplinary course that integrates Algebra with topics in business focused on entrepreneurship. Students will have the opportunity to create real businesses throughout the year. Topics include: developing estimates/forecasts; market research and assessing data; costing & pricing of products/services; and formulation of a business concept including projected financial statements. Algebra focus will be around spreadsheets, marginal analysis, profit, revenue, and cost functions as we study linear and quadratic functions. This course meets for two (2) blocks.

AP Calculus AB Ⓨ Ⓝ

MA0515	Grades 11, 12	2023-2024
2 Credits		Advanced Placement

Prerequisite: Precalculus; recommend grade of C or better in Precalculus

Students will study the equivalent of one semester of college calculus. Topics include a review of exponential, logarithmic, and trigonometric functions as well as limits, continuity, derivatives and their applications, slope fields, and integrals and their applications. Students will be able to create appropriate models for word problems, as well as use technology to explore new problems. Requires the use of a graphing calculator with functions of the TI-83 Plus or TI-84 Plus. This code for the course is restricted to students who identify as Black, all genders. AP Exam Information

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Prerequisite: Precalculus; recommend grade of C or better in Precalculus

Students will study the equivalent of one semester of college calculus. Topics include a review of exponential, logarithmic, and trigonometric functions as well as limits, continuity, derivatives and their applications, slope fields, and integrals and their applications. Students will be able to create appropriate models for word problems, as well as use technology to explore new problems. Requires the use of a graphing calculator with functions of the TI-83 Plus or TI-84 Plus. AP Exam Information

AP Calculus AB Ⓨ Ⓝ

MA0565	Grades 11, 12	2023-2024
2 Credits		Advanced Placement

Prerequisite: Precalculus; recommend grade of C or better in Precalculus

Students will study the equivalent of one semester of college calculus. Topics include a review of exponential, logarithmic, and trigonometric functions as well as limits, continuity, derivatives and their applications, slope fields, and integrals and their applications. Students will be able to create appropriate models for word problems, as well as use technology to explore new problems. Requires the use of a graphing calculator with functions of the TI-83 Plus or TI-84 Plus. This code for the course is restricted to students who identify as Latinx, all genders. AP Exam Information

AP Calculus BC Ⓨ Ⓝ

MA0605	Grades 11, 12	2023-2024
2 Credits		Advanced Placement

Prerequisite: Advanced Precalculus H; recommend grade of B or better in Advanced Precalculus H

Students will study the equivalent of two semesters of college calculus. Topics studied in the course include all of the topics in AP Calculus AB as well as motion in the plane; Euler's and Newton's methods; techniques of integration including partial fractions, trig substitution, and integration by parts; parametric and polar functions; improper integrals; numerical approximations of integrals and error measures; sequences and series; Taylor's series; and beginning work with separable differential equations. The course is both conceptual and application-based with an emphasis on understanding the key ideas of calculus and applying them to various situations. Requires the use of a graphing calculator with functions of the TI-83 Plus or TI-84 Plus. AP Exam Information

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Prerequisite: Programming with Java H

Students will enhance their analytical and problem-solving skills. This is a college-level course in computer science. Topics include object-oriented program design, algorithms, and algorithm analysis, data representations, and control structures. Special attention is paid to the analysis of a large "case study" program and object-oriented programming. May be taken for either CTE or Mathematics credit. AP Computer Science courses are equivalent to a high school mathematics semester course and this equivalence will be denoted on the student's transcript. AP Exam Information

AP Computer Science Principles Ⓨ Ⓝ Ⓟ

MA0855	Grades 10, 11, 12	2023-2024
2 Credits		Advanced Placement

Prerequisite: None

Students will creatively apply computer technology to solve real world problems. Students will explore major areas of computer science including: programming & algorithms (using Python); understanding the technologies of the web; working with data & big data sets; and using computer models/simulations to make predictions. This will be accomplished through hands-on & collaborative activities. AP Computer Science courses are equivalent to a high school mathematics course and this equivalence will be denoted on the student's transcript. AP Exam Information

AP Precalculus Ⓨ Ⓝ

MA0525	Grades 10, 11, 12	2023-2024
2 Credits		Advanced Placement

Prerequisite: Adv 2 Algebra H

Students will solve multi-part problems in context. Topics will include advanced precalculus topics, trigonometry, function analysis, sequences, series, limits, vectors, induction, graphing and probability. A graphing calculator is required. AP Exam Information

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Prerequisite: 2 Algebra; recommend grade of C or better in previous math class

Students will develop written and verbal communication skills around what data means in context so that the data can inform decisions about real-world problems. This is an introductory, non-calculus based college-level statistics class. Emphasis is placed on the collection, analysis, and interpretation of real-world categorical and quantitative data. Course topics include univariate and bivariate data analysis and interpretation, linear and non-linear regression, understanding and comparing distributions (particularly the normal distribution), probability, discrete and continuous random variables, sampling and experiment design, and statistical inference (including confidence intervals and significance tests). Requires the use of the TI-83 Plus or TI-84 Plus graphing calculator. AP Exam Information

College Algebra H Ⓨ Ⓝ Ⓓ

MA3273 Honors	Grade 12	2023-2024
2 Credits		Honors

Prerequisite: Intermediate College Algebra Honors or Department Recommendation

Students will study algebraic principles and develop their problem solving and critical thinking. Topics include algebraic and exponential functions, polynomial, rational, exponential, logarithmic, and special functions; systems of equations and inequalities, sequences and series, and the binomial theorem. A graphing calculator is required. Equivalent to Oakton course MAT140.Mathematics Department Dual Credit Information

Data Science Ⓨ Ⓝ

MA0402	Grades 10, 11, 12	2023-2024
2 Credits		Pathway to Honors

Prerequisite: 2 Algebra

Students will study local data that includes direct application to their lives. Topics will include data analysis, sampling, data visualization, correlation/causation, bias and uncertainty, probability, modeling with data, making and evaluating data-based arguments, and the power of data in society. ETHS will be partnering with Northwestern University and Jo Boaler at Stanford University for this course.

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Prerequisite: Geometry

Students strengthen their algebra/geometry skills and preview many advanced algebra topics. Includes the study of fundamental concepts, operations, applications of algebra, linear, quadratic, exponential, and polynomial functions, inequalities, graphing, systems of equations, some trigonometry topics, probability, statistics, and preparation for standardized tests. A graphing calculator is required. Equivalent to Oakton course MAT070.Mathematics Department Dual Credit Information

Geometry Ⓨ Ⓝ

MA0202, MAGEOS	All Grades	2023-2024
2 Credits		Pathway to Honors

Prerequisite: 1 Algebra

Students will engage in work that promotes critical thinking and problem solving, collaboration and influence, agility and adaptability, initiative and entrepreneurship, effective communication, resourcefulness with information as well as curiosity and imagination. The focus of the Geometry class will be on integrating algebra in a geometric context, coordinate geometry, justification, structured argument, reasoning, transformations, shape recognition and manipulation, modeling and building visual skills. The course will infuse art, design, aesthetics, spatial thinking, construction, perseverance, and precision.
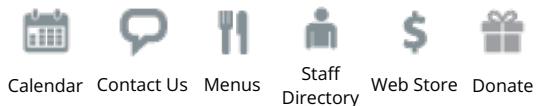
Geometry in Construction Ⓨ Ⓝ

GEOSTR	All Grades	2023-2024
4 (2 CTE, 2 Math) Credits		Pathway to Honors

Prerequisite: 1 Algebra

Students will be able to gain a better understanding of both the Geometry and the Construction content through the combination of the academic and work-world contexts. Geometry in Construction is an interdisciplinary course that integrates Geometry and Construction topics through the building of a significant construction project. Geometry topics will focus on integrating algebra in a geometric context, coordinate geometry, justification, structured argument, reasoning, transformations, shape recognition and manipulation, modeling and building visual skills. Students will be exposed to and gain hands-on experience in the following areas of Construction: safety, framing, HVAC, plumbing, roofing, windows, exterior doors, and siding. Additional emphasis is given to teamwork, problem-solving, and the promotion of STEM education. This course meets for two (2) blocks.

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Prerequisite: 1 Algebra

Students will gain a deeper understanding of both Geometry and Engineering by infusing numeracy instruction with project-based learning. This course is designed for students who plan to enroll in Geometry and Introduction to Engineering Design. Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. Geometry topics focus on integrating algebra in a geometric context, coordinate geometry, justification, structured argument, reasoning, transformations, shape recognition and manipulation, modeling and building visual skills. Dual Credit is available for Introduction to Engineering Design from Oakton Community College: CAD-105 - Industrial Design Engineering - 4 credits. As a PLTW course, IED carries AP grade weight.For more information about ETHS' Engineering Program click here This course meets for two (2) blocks.

Geometry Support Ⓨ Ⓝ

MAGEOS	All Grades	2023-2024
1 Credit		

Prerequisite: 1 Algebra

Students will have additional practice on algebraic and geometric concepts. They will have extra time to explore geometric topics for further understanding.

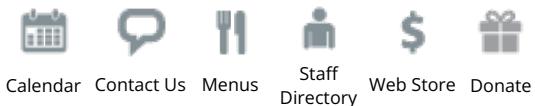### Intermediate College Algebra H Trans STEM TM001 Ⓨ Ⓝ

MA3253 Honors	Grades 11, 12	2023-2024
2 Credits		Honors

Prerequisite: Elementary College Algebra or 2 Algebra

Students will study algebraic principles and develop their problem solving and critical thinking. Content includes real and complex numbers, exponents, polynomials, radicals, first- and second-degree equations, systems of equations, inequalities and rational expressions. Course objectives will be achieved using computer-assisted learning, group process, individualized learning and tiered instruction. A graphing calculator is required. Equivalent to Oakton course MAT095.Mathematics Department Dual Credit Information

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Prerequisite: Precalculus

Students will learn to reason quantitatively from a variety of mathematical perspectives. Topics include probability, statistics, logic, algebra, geometry, computer programming, intro. to set theory, intro. to microeconomics, intro. to calculus, estimation, and the process of problem solving. A graphing calculator is required. Equivalent to Oakton course MAT125. Mathematics Department Dual Credit Information

Mathematics Independent Study ②

MA2990	Grades 11, 12	2023-2024

1 Credit

Prerequisite: Department recommendation

Students wishing to do independent study in math must find a math teacher to serve as an advisor and must obtain approval from the department chair. Available only on a pass/fail basis.

Mathematics Independent Study ①

MA1990	Grades 11, 12	2023-2024

1 Credit

Prerequisite: Department recommendation

Students wishing to do independent study in math must find a math teacher to serve as an advisor and must obtain approval from the department chair. Available only on a pass/fail basis.

Mathematics Independent Study Ⓨ

MA0990	Grades 11, 12	2023-2024

2 Credits

Prerequisite: Department recommendation

Students wishing to do independent study in math must find a math teacher to serve as an advisor and must obtain approval from the department chair. Available only on a pass/fail basis.

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Prerequisite: BC Calculus AP; Score of 4 or 5 on the BC Calculus AP exam

Students will study two college-level courses. Topics in vectors, vector analysis, partial differentiation, multiple integration and Green's theorem are covered. Linear algebra includes matrices, vector spaces, eigenvalues, linear transformations, and writing original proofs. A graphing calculator with a symbolic manipulator is required. The TI-Nspire CAS is preferred, but the TI-89, TI-92, and TI-Voyage 200 are acceptable.Mathematics Department Dual Credit Information

Pre-Algebra Ⓨ

MA1000	All Grades	2023-2024
2 Credits		

Prerequisite: None

Students will work on problem solving and skill development in an algebraic context. This course focuses on fundamental algebraic concepts.

Precalculus Ⓨ Ⓝ

MA0562	Grades 10, 11, 12	2023-2024
2 Credits		Pathway to Honors

Prerequisite: 2 Algebra; recommend grade of C or better in 2 Algebra

Students will solve multi-part problems in context. Topics will include precalculus, trigonometry, function analysis, series, and limits. A graphing calculator is required. This code for the course is restricted to students who identify as Latinx, all genders.

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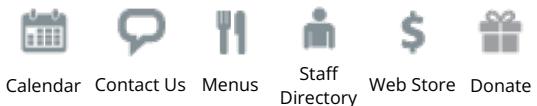
Prerequisite: 2 Algebra; recommend grade of C or better in 2 Algebra

Students will solve multi-part problems in context. Topics will include precalculus, trigonometry, function analysis, series, and limits. A graphing calculator is required. This code for the course is restricted to students who identify as Black male students.

Precalculus Ⓨ Ⓝ

MA0502	Grades 10, 11, 12	2023-2024
2 Credits		Pathway to Honors

Prerequisite: 2 Algebra; recommend grade of C or better in 2 Algebra

Students will solve multi-part problems in context. Topics will include precalculus, trigonometry, function analysis, series, and limits. A graphing calculator is required.

Programming with Java ①

MA1150	All Grades	2023-2024
1 Credit		Pathway to Honors

Prerequisite: Geometry

Students learn structured and object-oriented design of programs using Java computer language through classroom discussion and intensive lab experience. Includes program design, Java syntax, loops, conditionals and classes. An introductory Java programming course. Recommended for students pursuing science, engineering, math or computer science majors. Intended as the first step toward gaining Advanced Placement credit in Computer Science A. May be taken for either CTE or Mathematics credit.

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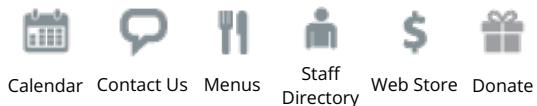
Prerequisite: None

Students will delve into the lenses and perspectives through which each of these 5 disciplines (Science, Technology, Engineering, Art, and Math) think about the world in this collaborative, inquiry-driven, process-based STEAM course. This course makes that thinking visible and explicit to students so that they can recognize and engage in these different viewpoints. In conjunction with partnerships and through locally-sourced and student-generated problems, students will apply a variety of methodologies, leverage networks and utilize a whole brain approach to produce narratives, innovative solutions, and foster creativity. Throughout this experience students will discover passion and purpose while developing critical 21st century skills. This course will provide a unique experience for students as they apply what they have learned in a transdisciplinary setting.This course meets for two (2) blocks.

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