

MATHEMATICS

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The Mathematics curriculum is designed to meet the needs of all students. The curriculum is structured into three distinct sequences based upon student abilities. Any six semesters of mathematics, in the right sequence, will fulfill the three-year requirement for graduation.

All Math classes are year-long unless noted. Each course builds on the courses before it. The typical sequence includes some level of Algebra, Geometry, Algebra 2/Trigonometry, Pre-Calculus, and Calculus.

AP Computer Science is an elective credit and does not fulfill the three-year math credit graduation requirement.

Because Honors and Advanced Placement (AP) course work is accelerated and more sophisticated, upper level work of high quality in a compacted time frame is demanded of students. The Math Department has developed recommendations for student success. These criteria are indicators of performance levels or standards for the Honors or AP courses and are available from the Math Department.

MATHEMATICS COURSE LISTINGS

GENERAL COURSES

COURSE#	TITLE	LEVEL	PREREQUISITE
MATH1000	Math 100	Yr. 9	Placement required
MATH2000	Math 200	Yr. 9-10	Placement required
MATH3000	Math 300	Yr. 9-11	Placement required

COLLEGE PREP COURSES

COURSE#	TITLE	LEVEL	PREREQUISITE
MATH1002B	Algebra 1 Block (2 periods)	Yr. 9, 10	Teacher recommendation
MATH1002	Algebra 1	Yr. 9, 10	Teacher recommendation
MATH2007	Geometry Survey	Yr. 10-12	Teacher recommendation
MATH1003	Geometry	Yr. 9-11	Teacher recommendation
MATH1004	Algebra 2/ Trigonometry	Yr. 9-12	Teacher recommendation
MATH3006	Algebra 2	Yr. 10-12	Teacher recommendation
MATH3007	Trigonometry	Sem.11-12	Teacher recommendation
MATH3002	Probability & Statistics	Sem.11-12	Teacher recommendation
MATH2006	Precalculus	Yr. 10-12	Teacher recommendation
MATH3008	Calculus	Yr. 11-12	Teacher recommendation

MATHEMATICS COURSE LISTINGS (CONT'D)

ACCELERATED COLLEGE PREP COURSES

COURSE#	TITLE	LEVEL	PREREQUISITE
MATH1006A	AP Computer Science 1	Yr. 9-12	Teacher recommendation
MATH1003H	Honors Geometry	Yr. 9-10	Teacher recommendation
MATH1004H	Honors Algebra 2/Trig.	Yr. 9-11	Teacher recommendation
MATH2002A	AP Statistics	Yr. 10-12	Teacher recommendation
MATH2006H	Honors Precalculus	Yr. 10-12	Teacher recommendation
MATH3010A	AP Calculus AB	Yr. 11-12	Teacher recommendation
MATH3009A	AP Calculus BC	Yr. 11-12	Teacher recommendation
MATH4000D	Calculus 3	Yr. 11-12	Teacher recommendation

MATHEMATICS COURSE DESCRIPTIONS

All Math courses are year-long classes unless otherwise noted.

MATH1000 MATH 100 *Grade 9. Placement required.*

This course is designed to meet the needs of students who have experienced difficulty in learning mathematics in a traditional format. The content of this course develops basic arithmetic and computational skills using a variety of activities and group projects. This is the first course in a three-course sequence. A TI-30X calculator (or equivalent) is required. This course is not NCAA core approved.

MATH2000 MATH 200 *Grade 9-10. Placement required.*

This course stresses the applications of skills developed in Math 100. Practical applications used in everyday life situations will be emphasized. This course will cover pre-Algebra and some basic Geometry skills. Note-taking and study skills will be stressed. A TI-30X calculator (or equivalent) is required. This course is not NCAA core approved.

MATH3000 MATH 300 *Grade 9-11. Placement required.*

Emphasis in this course is on basic Algebra skills, including studying and graphing linear and quadratic equations, and further exploring Geometry concepts developed from Math 200. An integration of Algebra and Geometry will be covered. Note-taking and study skills will be stressed. A TI-30X (or equivalent) calculator is required. This course is not NCAA core approved.

MATH1002B ALGEBRA 1 BLOCK *Grade 9, 10. Placement required.*

This one-year Algebra 1 course meets daily in a two-period block. This course is designed for those students who struggled in pre-Algebra and need more time to process and develop these skills. . Students earn one Algebra 1 credit and one math elective credit; the math elective credit is pass/fail. Students are introduced to concepts covering modeling with mathematics, linear functions, solving equations and inequalities, solving systems of equations, graphing quadratics, operations with polynomials, basic statistics, and quadratic functions. Note-taking and study skills are stressed and formalized. A graphing calculator is required.

MATH1002 ALGEBRA 1 *Grade 9, 10 Placement required.*

MATH2007 GEOMETRY SURVEY *Grade 10-12. Placement required.*

Geometry Survey covers all the basic geometry concepts, using problem-solving through inductive and deductive reasoning, but with little emphasis on formal proofs. The course includes topics such as distance concepts, angles,

triangles, geometric inequalities, parallel and perpendicular lines and planes, polygons, circles, and spatial figures and their properties. Right-triangle trigonometry is introduced. A graphing calculator, compass, and protractor are required.

MATH1003 GEOMETRY Grade 9-11. Placement required

This course teaches the basics of Geometry and then further covers congruence, similarity, geometric proofs, properties and applications of quadrilaterals and circles, coordinate geometry, right triangle trigonometry, and surface area and volume of three-dimensional figures. A graphing calculator, compass, and protractor are required.

MATH1003H HONORS GEOMETRY Grade 9-10. Placement required. Weighted Grade.

In addition to covering the topics listed above for Geometry (MATH1003), this course provides a more rigorous and in-depth approach to covering geometric ideas and formal proofs. A graphing calculator, compass, and protractor are required.

MATH1004 ALGEBRA 2/TRIGONOMETRY Grade 9-12. Placement required

This course expands on concepts covered in Algebra 1 (MATH1002), but develops a deeper understanding while introducing more advanced algebra topics. Additional concepts in the field of Probability and Statistics will be studied. Trigonometry topics will be studied beyond what was previously covered in Geometry. A graphing calculator is required.

MATH1004H HONORS ALGEBRA 2/TRIGONOMETRY Grade 9-11. Placement required. Weighted Grade.

This course covers the same topics as MATH1004 Algebra 2/Trigonometry with greater depth and some additions including sequences and series. Starting with a brief review of some basic axioms and properties in algebra, the course moves quickly to newer topics, integrating real-life applications. A summer packet of Algebra 1 problems may be required. A graphing calculator is required.

MATH3006 ALGEBRA 2 Grade 10-12. Placement required

This course is devoted to providing an understanding of advanced algebra topics and expanding on the concepts of Algebra 1 (MATH1002). If the student intends to take Pre-Calculus the following year, Trigonometry during the summer is required. A graphing calculator is required.

MATH3007 TRIGONOMETRY Grade 11-12. One semester. Prerequisite is Algebra 2.

This one-semester course emphasizes an understanding of the theoretical and practical concepts of trigonometry and their relationship to algebra. A graphing calculator is required.

MATH3002 PROBABILITY AND STATISTICS Grade 11-12. One semester. Prerequisite is Algebra 2.

This semester course emphasizes basic probability and statistical techniques. A graphing calculator is required.

MATH2002A AP STATISTICS Grade 10-12. Prerequisite is Algebra 2/Trig or higher. Weighted Grade.

The Advanced Placement course in statistics introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students who successfully complete the course and AP examination may receive college credit and/or a higher placement in college. A summer reading assignment may be required. A TI-83 plus or a TI-84 plus graphing calculator is required. *NOTE: A TI-89 is not equipped with a statistics package.*

MATH2006 PRECALCULUS Grade 10-12. Prerequisite is Algebra 2/Trigonometry and placement.

This one-year course serves as a prerequisite for Calculus or AP Calculus AB. A major emphasis is an extended study of various functions, analytic geometry, polynomial functions, transcendental functions, and an introduction to limits. Trigonometric functions are further studied and utilized to solve real-world problems. A summer packet may be required. A graphing calculator is required.

MATH2006H HONORS PRECALCULUS *Grade 10-12. Prerequisite is Honors Algebra 2/Trigonometry and placement. Weighted Grade.*

This one year course serves as the prerequisite for Calculus or AP Calculus AB or BC. In addition to those topics covered in Precalculus, parametric, vector, and polar functions are studied. A summer packet may be required. A graphing calculator is required.

MATH1006A AP COMPUTER SCIENCE 1 *Grade 9-12. Prerequisite is Geometry. Weighted Grade.*

This one-year introductory course emphasizes structured computer programming. JAVA is emphasized as a tool to develop problem-solving, encourage student creativity, and facilitate discovery learning. Students who successfully complete this course and the AP Computer Science A examination may receive college credit and/or a higher placement for a college course. This course is a Math elective and does not meet the Math core graduation requirement.

MATH3008 CALCULUS *Grade 11-12.*

This calculus course reviews Precalculus concepts and introduces a study of limits, derivatives, integrals, and functions including trigonometric, exponential, and logarithmic functions. A graphing calculator is required.

MATH3010A AP CALCULUS AB *Grade 11-12. Prerequisite is Precalculus and placement. Weighted Grade.*

Topics include an in-depth study of a variety of functions and a study of limits. Additionally, differential and integral calculus with applications in optimization, related rates, area, and volume are covered. The demands of this course include analytical reasoning skills and disciplined study habits appropriate for continued success in college. Some independent study is required. This course is equivalent to the traditional college level Calculus I. Students who successfully complete this course and the AP Calculus AB examination may receive college credit and/or higher placement in college. A graphing calculator is required.

MATH3009A AP CALCULUS BC *Grade 11-12. Prerequisite is Honors Precalculus and placement Weighted Grade.*

This course covers everything listed in AP Calculus AB, with the additional topics of sequences and series, vector-valued functions, polar and parametric functions, and some proof of theorems. Extensive independent study is required. This course is equivalent to the traditional college level Calculus I and II. Students who successfully complete this course and the AP Calculus BC examination may receive college credit and/or higher placement in college. A graphing calculator is required.

MATH4000D CALCULUS 3 (MATH 242-4 SEMESTER HOURS @ UNIVERSITY OF ILLINOIS)

CALCULUS OF SEVERAL VARIABLES *Grade 11-12. Prerequisite is Calculus BC and a 4 or 5 on the AP Calculus BC exam.*

Contact the department chairperson for further explanation. Weighted Grade.

This course is the third course in Calculus and Analytic Geometry. Topics include three-dimensional space, functions of several variables, partial derivatives, and multiple integrals. This course uses MakingMath software. There is a fee associated with this course through University of Illinois. Qualifications on:

<http://netmath.math.uiuc.edu/whoqual.html>.