

MATHEMATICS COURSES

The high school mathematics course of study is based upon the national Common Core State Standards for Mathematics (CCSS-M) adopted by the North Carolina State Board of Education in June, 2010. The Common Core Standards specify the mathematics that all students should study in order to be college and career ready. To see a complete list of standards please go to www.corestandards.org. The standards are divided into two equally important parts: the Standards for Mathematical Practice and the Standards for Mathematical Content. The Practice Standards describe the characteristics and habits of mind that all mathematically proficient students exhibit. The Standards for Mathematical Practice are:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Practice Standards will be applied throughout each course and, together with the Content Standards, will ensure that students experience mathematics as a coherent, useful, and logical subject.

The Standards for Mathematical Content for high school are divided into six conceptual categories: Number and Quantity, Algebra, Functions, Modeling, Geometry, and Statistics and Probability.

In order to graduate from the Wake County Public School System, a student must earn a minimum of four credits in mathematics. More information on typical math course sequences can be found at <http://tinyurl.com/csak7ez>.

INTRODUCTORY MATHEMATICS (ELECTIVE CREDIT)

20202X0

1 CREDIT

Introductory Math provides learners with an opportunity to review and study foundational topics for higher-level mathematics. Topics include: simplifying expressions and solving one-variable equations and inequalities; one-variable statistics; different representation of functions; linear functions; the Pythagorean theorem; volume; solving systems of linear equations; graphing line of best fit; and operations with polynomials. Students will solve relevant and authentic problems using manipulatives and appropriate technology.

FOUNDATIONS OF MATH I (MATH IA) (ELECTIVE CREDIT)

20502X0

1 CREDIT

NOTE: This course should be paired with Math IB (21032X0B)

The purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. In conjunction with Math IB, this course deepens and extends understanding of linear relationships, in part by contrasting them with exponential and quadratic phenomena, and in part by applying linear models to data that exhibit a linear trend. In addition to studying bivariate data, students also summarize, represent, and interpret data on a single count or measurement variable. The Geometry standards that appear in this course formalize and extend students' geometric experiences to explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. The Standards for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.

MATH IB

21032X0B

1 CREDIT

Recommended prerequisite(s): Foundations of Math IA

Note: This course should be paired with Foundations of Math IA (20502X0)

The purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. This course deepens and extends understanding of linear relationships, in part by contrasting them with exponential and quadratic phenomena, and in part by applying linear models to data that exhibit a linear trend. In addition to studying bivariate data, students also summarize, represent, and interpret data on a single count or measurement variable. The Geometry standards that appear in this course formalize and extend students' geometric experiences to explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. The Standards for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. This course fulfills the North Carolina high school graduation requirement for Common Core Math I. The final exam is the North Carolina End-of-Course Test based on the Common Core Math 1 Standards.

MATH I

21032X0

1 CREDIT

Recommended prerequisite(s): Mastery of the middle school mathematics curriculum

The purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. This course deepens and extends understanding of linear relationships, in part by contrasting them with exponential and quadratic phenomena, and in part by applying linear models to data that exhibit a linear trend. In addition to studying bivariate data, students also summarize, represent, and interpret data on a single count or measurement variable. The Geometry standards that appear in this course formalize and extend students' geometric experiences to explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. The Standards for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. This course fulfills the North Carolina high school graduation requirement for Common Core Math I. The final exam is the North Carolina End-of-Course Test based on the Common Core Math 1 Standards.

FOUNDATIONS OF MATH II (ELECTIVE CREDIT)

20512X0

1 CREDIT

Recommended prerequisite(s): Marginal proficiency in Math I

Foundations of Math II provides learners with an opportunity to review and study foundational topics for higher-level mathematics. The topics covered will be based on student needs and will be aligned with Math II. Students will solve relevant and authentic problems using manipulatives and appropriate technology.

MATH II**22012X0****1 CREDIT**

Recommended prerequisite(s): Math I

In Math II, students continue to deepen their study of quadratic expressions, equations, and functions; comparing their characteristics and behavior to those of linear and exponential relationships from Math I. The concept of quadratics is generalized with the introduction of higher degree polynomials. New methods for solving quadratic and exponential equations are developed. The characteristics of advanced types of functions are investigated (including power, inverse variation, radical, absolute value, piecewise-defined, and simple trigonometric functions). The link between probability and data is explored through conditional probability and counting methods. Students explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. Important differences exist between Math II and the historical approach taken in Geometry classes. For example, transformations are explored early in the course and provide the framework for studying geometric concepts such as similarity and congruence. The study of similarity leads to an understanding of right triangle trigonometry and connects to quadratics through Pythagorean relationships. The Standards for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. This course fulfills the North Carolina high school graduation requirement for Math II. The final exam is the North Carolina Final Exam for Math II.

MATH II (HONORS)**22015X0****1 CREDIT (HN)**

Recommended prerequisite(s): Math I

In Math II, students continue to deepen their study of quadratic expressions, equations, and functions; comparing their characteristics and behavior to those of linear and exponential relationships from Math I. The concept of quadratics is generalized with the introduction of more sophisticated polynomials. New methods for solving quadratic and exponential equations are developed. The characteristics of more advanced types of functions are investigated (including power, inverse variation, radical, absolute value, piecewise-defined, and simple trigonometric functions). The link between probability and data is explored through conditional probability and counting methods. Students explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. Important differences exist between Math II and the historical approach taken in Geometry classes. For example, transformations are explored early in the course and provide the framework for studying geometric concepts such as similarity and congruence. The study of similarity leads to an understanding of right triangle trigonometry and connects to quadratics through Pythagorean relationships. Honors Math II explores content at a rigorous level to begin students' preparation for advanced math courses. The Standards for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. This course fulfills the North Carolina high school graduation requirement for Math II. The final exam is the North Carolina Final Exam for Math II.

FOUNDATIONS OF MATH III (ELECTIVE CREDIT)**20522X0****1 CREDIT**

Recommended prerequisite(s): Marginal proficiency in Math II

Foundations of Math III provides learners with an opportunity to review and study foundational topics for higher-level mathematics. The topics covered will be based on student needs and will be aligned with Math III. Students will solve relevant and authentic problems using manipulatives and appropriate technology.

MATH III**23012X0****1 CREDIT**

Recommended prerequisite(s): Math II

This course is designed so that students have the opportunity to pull together and apply the accumulation of mathematics concepts learned previously. They apply methods from probability and statistics to draw inferences and conclusions from data. Students expand their repertoire of functions to include polynomial, rational, and radical functions, including an intense study of families of functions and the relationships therein. They expand their study of right triangle trigonometry to include general triangles and in the study of trigonometric functions to model simple periodic phenomena. Finally, students bring together all of their experience with functions and geometry to create models and solve contextual problems. Appropriate technology and tools, including manipulatives and calculators, will be used regularly for instruction and assessment. The Standard for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that means use of their ability to make sense of problems situations. This course fulfills the North Carolina high school graduation requirement for Math III. The final exam is the North Carolina Final Exam for Math III.

MATH III (HONORS)**23015X0****1 CREDIT (HN)**

Recommended prerequisite(s): Honors Math II

This course is designed so that students have the opportunity to pull together and apply the accumulation of mathematics concepts learned previously. They apply methods from probability and statistics to draw inferences and conclusions from data. Students expand their repertoire of functions to include polynomial, rational, and radical functions, including an intense study of families of functions and the relationships therein. They expand their study of right triangle trigonometry to include general triangles and in the study of trigonometric functions to model simple periodic phenomena. Finally, students bring together all of their experience with functions and geometry to create models and solve contextual problems. Appropriate technology and tools, including manipulatives and calculators, will be used regularly for instruction and assessment. The Standard for Mathematical Practice apply throughout each course and, together with the content standards, require that students experience mathematics as a coherent, useful, and logical subject that means use of their ability to make sense of problems situations. This course fulfills the North Carolina high school graduation requirement for Math III. The final exam is the North Carolina Final Exam for Math III.

4TH MATH COURSES

The following mathematics courses are accepted as the 4th level mathematics course required for graduation under the Future Ready Core. If interested, see your counselor to discuss Community College mathematics course options that meet graduation requirements and minimum admission requirements for UNC System institutions. Students wishing to attend non-UNC System colleges, a community college, or a technical school should check with the postsecondary institution for minimum admission requirements. If interested, see your counselor to discuss CTE course options that can also count as the 4th math credit needed for graduation.

ADVANCED FUNCTIONS AND MODELING**24002X0****1 CREDIT**

Recommended prerequisite(s): Algebra II or Math III

Advanced Functions and Modeling provides students an in-depth study of modeling and applying functions. Home, work, recreation, consumer issues, public policy, and scientific investigations are just a few of the areas from which applications should originate. Appropriate technology, from manipulatives to calculators and application software, should be used regularly for instruction and assessment. Advanced Functions and Modeling is not an honors level course. **A student cannot receive math graduation credit for Advanced Functions and Modeling and Precalculus; one must count as an elective.** This course is accepted as the fourth math for admission to UNC System institutions. The final exam is the North Carolina Final Exam for Advanced Functions and Modeling.

DISCRETE MATH**24012X0****1 CREDIT**

Recommended prerequisite(s): Algebra II or Math III

Discrete Math introduces students to the mathematics of networks, social choice, and decision-making. The course extends students' application of matrix arithmetic and probability. Applications and modeling are central to this course of study. Appropriate technology, from manipulatives to calculators and application software, is used for instruction and assessment. This course is accepted as the fourth math for admission to UNC System institutions. . The final exam is the North Carolina Final Exam for Discrete Math.

PRECALCULUS (HONORS)	24035X0	1	CREDIT	(HN)
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Recommended prerequisite(s): Honors Algebra II or Honors Math III

Precalculus is the Honors level of Advanced Functions and Modeling. The Precalculus curriculum includes a complete study of trigonometry, as well as advanced algebra topics, analytic geometry, series and sequence, data analysis, vectors, and limits. Applications and modeling are included throughout the course of study. Appropriate technology, from manipulatives to calculators and application software, is used for instruction and assessment. Students must have extensive knowledge of the graphics calculator. **A student cannot receive math graduation credit for Precalculus and Advanced Functions and Modeling; one must count as an elective.** This course is accepted as the fourth math for admission to UNC System institutions. . The final exam is the North Carolina Final Exam for Precalculus.

ADVANCED PLACEMENT STATISTICS	2A037X0	1	CREDIT	(AP)
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Recommended prerequisite(s): Honors Algebra II, Honors Math III, or Advanced Functions and Modeling

The AP Statistics curriculum is divided into four major themes: exploratory analysis, planning a study, probability, and statistical inference. This is a college-level course. Use of computers and graphing calculators play an important role in this course. For each session of classroom instruction, the student is expected to spend, as a minimum, an equal amount of time outside the classroom for review, written assignments, and preparation. It is expected that students enrolled in this course will take the College Board Advanced Placement Exam. This course is accepted as the fourth math for admission to UNC System institutions.

ADVANCED PLACEMENT CALCULUS: AB	2A007X0	1	CREDIT	(AP)
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Recommended prerequisite(s): Mastery of the Precalculus curriculum

The AP Calculus curriculum includes limits, continuity, derivatives with applications, and elementary integration with applications. This is a college-level course. Use of computers and graphing calculators play an important role in this course. For each session of classroom instruction the student is expected to spend, as a minimum, an equal amount of time outside the classroom for review, written assignments, and preparation. It is expected that students enrolled in this course will take the College Board Advanced Placement Exam. This course is accepted as the fourth math for admission to UNC System institutions.

ADVANCED PLACEMENT CALCULUS: BC	2A017X0	1	CREDIT	(AP)
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Recommended prerequisite(s): AP Calculus AB

The BC level of AP Calculus revisits some topics introduced in the AB course. Topics include differentials, integrals, infinite series, and differential equations. In addition, the curriculum for this course includes convergence and divergence of sequences and series, parametric representation of curves, polar curves, and additional integration techniques. This is a college-level course. Use of computers and graphing calculators play an important role in this course. For each session of classroom instruction, the student is expected to spend, as a minimum, an equal amount of time outside the classroom for review, written assignments, and preparation. It is expected that students enrolled in this course will take the College Board Advanced Placement Exam. This course is accepted as the fourth math for admission to UNC System institutions.