
MATHEMATICS

The State Board of Education approved the Common Core State Standards (CCSS) for Math K-12 in 2010. These standards are meant to be enduring, rigorous, and provide the knowledge and skills our students need to be successful, contributing members of a 21st century global economy. In April 2012, these standards were merged into one statewide pathway of NC Math I, NC Math II, and NC Math III forming a coherent progression of content. The purpose of this change was to better prepare students for upper level mathematics courses in high school, college mathematics courses, and the workplace.

Four mathematics units are required for graduation.

The Future-Ready Core mathematics requirement states that students entering ninth grade for the first time in 2009-2010 and beyond must pass 4 mathematics credits. Students entering ninth grade for the first time in 2012-2013 and beyond, will complete a sequence of NC Math I, NC Math II, NC Math III and a 4th math. The 4th mathematics course is to be aligned with the student's post-high school plans.

FOUNDATIONS OF NC MATH I

Course Code: 20902X0C **Fee (if applicable):** n/a

Offered at: DHS, JHS, NHS, RHS, SBHS, WOHS **Grade(s):** 9,10,11,12

Prerequisite: None

Foundations of NC Math I is designed to assist students in mastering the algebraic skills necessary for success in NC Math I. Students will learn to (1) operate with the real numbers to solve problems; (2) find, identify, and interpret the slopes and intercepts of a linear relation; (3) visually determine a line of best fit for a given scatter plot, explain the meaning of the line, and make predictions using the line; (4) collect, organize, analyze, and display data to solve problems; (5) apply the Pythagorean Theorem to solve problems. This course provides one unit of elective credit, but does not count as one of the four math credits required to graduate meeting the future-ready core requirements.

NC MATH I

Course Code: 21092X0C **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 9,10,11,12

Prerequisite: None

NC MATH I – HONORS - Course Code: 21095X0C

Students in this course will build on work in 8th grade Math to: Write algebraic expressions in equivalent forms to solve problems, including expressions with rational exponents with like denominators; Use reasoning and modeling to solve equations & inequalities and apply them to relationships & numbers; Solve, apply and interpret linear systems of equations & inequalities; Identify & create translations in the coordinate plane; Use function notation to represent and interpret linear and exponential relationship between two quantities; Graph linear, exponential and quadratic functions; Create and interpret box plots, frequency tables, and regression equations from one or two variable data; Use parallel and perpendicular slopes & midpoint and distance formulas to prove simple geometric theorems.

FOUNDATIONS OF NC MATH II

Course Code: 20912X0C **Fee (if applicable):** n/a

Offered at: NHS, RHS, SBHS **Grade(s):** 9,10,11,12

Prerequisite: NC Math I

Foundations of NC Math II is a course designed for students who have earned a NC Math I credit but require additional support in mastering the skills necessary for success in the second course. This course will allow students to develop the understanding of geometric terminology and concepts through the use of manipulatives, technology, algebraic representation and development of problem solving skills. This course provides one unit of elective credit, but does not count as one of the four math credits required to graduate meeting the future-ready core requirements.

NC MATH II

Course Code: 22092X0C **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 9,10,11,12

Prerequisite: NC Math I

NC MATH II – HONORS - Course Code: 22095X0C

Prerequisite: NC Math I

Students in this course will build on work in NC Math I to:

Write algebraic expressions in equivalent forms including-expressions with rational exponents with unlike denominators, simplifying radicals, multiplying up to 3 linear expressions; Solve and graph linear non-linear and mixed systems of equation & inequalities; Use systems of linear inequalities to model and investigate optimization situations; Identify & create transformations in the coordinate plane; Apply right triangle trig, special right triangles, and law of sines to real world situations including angle of elevation & depression; Use reasoning to prove congruence of triangles; Find the volume, surface area, and lateral area of solids and apply to density modeling; Examine cross-sections of solids; Apply the concepts of roots & zeroes and quadratic formula to solve quadratic equations; graph quadratic, rational, and radical functions; Apply logs to solve exponential equations; Find independent, dependent, conditional probabilities.

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FOUNDATIONS OF NC MATH III

Course Code: 20922X0C **Fee (if applicable):** n/a

Offered at: NHS, RHS, WOHS **Grade(s):** 9,10,11,12

Prerequisite: NC Math II

Foundations of NC Math III is a course designed for students who have earned a NC Math II credit but need additional support in mastering the skills necessary for success in the third math course. This course will give students the opportunity to build on prior algebraic concepts that include radicals, functions, equations and systems. This course provides one unit of elective credit.

NC MATH III

Course Code: 23092X0C **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 9,10,11,12

Prerequisite: NC Math II

NC MATH III – HONORS - Course Code: 23095X0C

Prerequisite: NC Math II

Students in this course will build on work in NC Math II to:

Perform operations with polynomials and complex numbers; Graph and apply polynomial functions & identify zeroes and end behavior; Write arithmetic & geometric sequences in explicit and formal recursive form; Perform operations with radical & rational expressions; Solve radical & rational equations and graph radical & rational functions; Graph and interpret key features of functions modeling situations with two variables, including absolute value, linear, polynomial, & quadratic; Predict and apply transformations of functions, including absolute value, linear, polynomial, & quadratic; Identify and describe relationships among inscribed angles, radii, and chords, area of sectors and arc length; Construct polygons inscribed in circles and circles inscribed in polygons; Use the unit circle and radians to identify the graph of sine, cosine and tangent functions; Apply trig properties to prove trig identities; Graph and write the equations of a circle; Identify and interpret normal distribution and standard deviation.

ADVANCED FUNCTIONS AND MODELING

Course Code: 24002X0C **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 10,11,12

Prerequisite: NC Math III

ADVANCED FUNCTIONS AND MODELING – Honors

Course Code: 24005X0C

Prerequisite: NC Math III

This fourth math course provides an in-depth study of modeling and applying functions. Linear, quadratic, cubic, trigonometric, exponential, logarithmic and piece-wise functions will be used to solve problems. Students will also analyze data and apply probability concepts to solve problems. Home, work, recreation, consumer issues, public policy, and scientific investigations are areas from which applications will originate. Appropriate technology will be

used regularly for instruction and assessment. The final exam for this course is the NC Final Exam for AFM.

AFM is intended for students for students who wish to be NC University system Ready and who may want to pursue a STEM course of study. It is also appropriate as an additional course prior to Pre-Calculus or Calculus.

ESSENTIALS FOR COLLEGE MATH (SREB READY MATH)

Course Code: 24082X0C **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 10,11,12

Prerequisite: NC Math III

This fourth level math course emphasizes understanding of math concepts rather than just memorizing procedures. Math Ready students learn the context behind the procedure: why to use a certain formula or method to solve a problem, for example. This equips them with higher-order thinking to apply math skills, functions and concepts in different situations. Main topics include: exponentials, quadratics, equations, measurements, number operations, systems, linear functions, statistics (optional).

This course is intended for a student who wishes to be NC University System Ready but who does not intend to pursue a STEM course of study. This course is also appropriate as an additional review prior to Pre-Calculus or Calculus.

PRE-CALCULUS HONORS

Course Code: 24035X0C **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 9,10,11,12

Prerequisite: NC Math III and/or Advanced Functions and Modeling (SBHS – AFM is the prerequisite)

Pre-Calculus Honors provides students an honors-level study of trigonometry, advanced functions, analytic geometry, and data analysis in preparation for calculus. Applications and modeling will be included throughout the course of study. The final exam for this course is the NC Final Exam for Pre-Calculus Honors.

CALCULUS AB-ADVANCED PLACEMENT

Course Code: 2A007X0CAP **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 10,11,12

Prerequisite: Pre-Calculus

This course provides a review of the concepts covered in Pre-Calculus with an emphasis on functions (particularly trigonometric). The course will introduce the student to limits and topics in differential and integral calculus. Students will also have an opportunity to explore conic sections and polar coordinates. Students taking this course are encouraged to take the AP exam.

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CALCULUS BC-ADVANCED PLACEMENT

Course Code: 2A017X0CAP **Fee (if applicable):** n/a

Offered at: JHS, NHS, RHS **Grade(s):** 11,12

Prerequisite: Advanced Placement Calculus AB

Advanced Placement Calculus develops the student's understanding of the concepts of calculus (functions, graphs, limits, derivatives and integrals) and provides experience with its methods and applications. The course encourages the geometric, numerical, analytical, and verbal expression of concepts, results, and problems. Appropriate technology, from manipulatives to calculators and application software, should be used regularly for instruction and assessment. Students taking this course are encouraged to take the AP exam.

STATISTICS-ADVANCED PLACEMENT

Course Code: 2A037X0CAP **Fee (if applicable):** n/a

Offered at: All High Schools **Grade(s):** 10,11,12

Prerequisite: Pre-Calculus (SBHS – AFM is the prerequisite)

Advanced Placement Statistics is an introductory, non-calculus based, college course in statistics. The four major topics studied include organizing data, producing data: samples and experiments, probability: foundations of inference, and inference: conclusions with confidence. Students entering the course should be proficient in reading mathematical text and be willing to research independently outside of class time. A grade of B or higher in Algebra II and/or NC Math III is recommended for this course. Students are expected to take the AP examination. The student may earn college credit for successful completion of the course and AP examination.