



2017-2018 Registration Information

High School Mathematics

Sonia Dupree, Senior Administrator, sdupree@wcpss.net 919.533.7193
Anna Jackson, Coordinating Teacher, ajackson1@wcpss.net 919.533.7184

What are the graduation requirements for math?

For 9th graders entering in 2012-13 and beyond:

- For the Future Ready Core, students are required to earn four math credits – NC Math 1, NC Math 2, NC Math 3, and a 4th math course beyond Math 3 to be aligned with the student's post-high school plans. The [Math Options Chart](#) lists courses that can count as the 4th math required for graduation (first two columns of the chart).
- In the instance that a principal grants an exception to a student from the Future Ready Core math sequence, the student will be required to successfully complete NC Math 1 and NC Math 2, plus two other application-based math courses or selected CTE (or pairs of CTE) courses. The third column of the Math Options Chart gives a list of courses that can fulfill this requirement.
- NC Math 1 is a graduation requirement for all students. The only exception to this requirement is for students that have an Individual Education Program (IEP) that identifies them as Learning Disabled (LD) in math and states that the disability will prevent them from mastering the mathematical content in NC Math 1 and above. Students falling under the NC Math 1 exemption are still required to have four math credits, which can include Fundamental Math 1, Introductory Mathematics, the Foundations courses and/or CTE courses listed on the Math Options Chart.
- If you have questions about or wish to verify whether a particular sequence of courses fulfills the math graduation requirements, please contact Sonia Dupree.
- Students take an NC End-of-Course assessment at the conclusion of the NC Math 1 course.
- Student take an NC Final Exam at the conclusion of NC Math 2, NC Math 3, AFM, Discrete Math, and Precalculus.

What standards are taught in high school mathematics courses?

- The North Carolina Standards for mathematics are the new NC Standards for High School Mathematics. All courses up to and including NC Math 3 teach these standards.
- Other math courses may use a combination of the Common Core State Standards for Mathematics, the 2003 NC Standard Course of Study, and other standards that are specific to the desired outcomes of the course.

Where do AP and IB courses fit into this sequence?

- There are three AP math courses: AP Calculus AB, AP Calculus BC, and AP Statistics.
- The AP Calculus courses are taken after Precalculus, so students taking AP Calculus have already fulfilled the math graduation requirements (see [Typical High School Math Course Sequences](#)). Both AP Calculus AB and AP Calculus BC are typically taken in the same year on the 4x4 block schedule.
- AP Statistics can be taken after NC Math 2 and may be taken in conjunction with other math courses. AP Statistics can count as the 4th math credit required for graduation.
- The majority of college majors require some type of statistics course in the plan of study. (See [Example Majors](#))
- The International Baccalaureate math and computer science courses IB Mathematical Studies SL, IB Mathematics SL, IB Mathematics HL, IB Further Math HL, IB Computer Science SL, and IB Computer Science HL can count as the required 4th math credit beyond NC Math 3.
- There is also an AP Computer Science course that can count as either an elective or as the 4th math towards graduation for students not intending to enter a UNC System institution.

Recommendations for Most Rigorously Appropriate Course Placement for Mathematics Rising 9th Graders

The High School Mathematics Program is committed to providing the highest level of rigor for each student. **Schools will place students in appropriate course levels, based on any one or more data points below.**

Current Course	Data Indicators All data points are in Quickr.			
	Data Source	Threshold	Recommendation	Moving Ahead . . .
Math 8	7 th and 8 th Grade Math Course Grades	A or B in any level	NC Math 1 (semester)	For grades 10-12, any student making an A or B at any level should be placed in the next highest level.
	OR			
	8 th (7 th) Grade EOG Score for Math	4.0-5.0	NC Math 1 (semester)	For NC Math 2, the NC Math 1 EOC score may help identify students who would benefit from access to higher rigor.
		3.0-3.9	NC Math 1A/IB	
		2.0-2.9	Introductory Mathematics	
		1.9 and below	Fundamental NC Math 1 & Introductory Math	
	AND/OR			
	EVAAS Predicted Score for NC Math 1 EOC	Level 3.5-5	NC Math 1 (semester)	Reminder: EVAAS predictions are a function of other data points, so they are best used to confirm a recommendation, not to change a recommendation.
		Level 2-3.5	NC Math 1A/IB	
		Level 1.9 and below	Fundamental NC Math 1 and/or Introductory Mathematics	
NC Math 1	NC Math 1 Course Grade	A or B	NC Math 2 (Honors)	For grades 10-12, any student making an A or B at any level should be placed in the next highest level.
		C or D	Math Plus* and NC Math 2 (Honors)	
	OR			
	NC Math 1 EOC (7 th Grade EOG) Score	3.5-5.0	NC Math 2 (Honors)	NC Math 1 EOC scores should be checked over the summer by the high school to identify students who would benefit from access to higher rigor.
3.4 and below		Math Plus* and NC Math 2 (Honors)		

Students taking NC Math 2 in middle school should be placed in NC Math 3 (Honors). Students taking NC Math 3 should be placed in Precalculus.

*If the feeder high school does not offer Math Plus, the student may consider retaking NC Math 1 in order to build a stronger foundation before proceeding to Honors NC Math 2.

Additional Registration Information

- Students transferring in with credits from a traditional pathway are recommended for the following math course placements:

Math Credits Transferring In	Math Course Placement
Algebra I	NC Math 2
Algebra I, Geometry	Both NC Math 2 and NC Math 3 <i>Students going from Geometry to NC Math 3 will miss significant portions of algebra content.</i>
Algebra I, Algebra II	Both NC Math 2 and NC Math 3 <i>Students going from Algebra II to NC Math 3 will miss significant portions of geometry content.</i>

- NC Math 1:** We recommend that true freshmen who fail Foundations of NC Math 1 (NC Math 1A) in the fall enroll in Introductory Mathematics in the spring.
- Foundations of NC Math 2:** Students who passed NC Math 1A/IB in high school with a D or low C.
- Foundations of NC Math 3:** Students who passed NC Math 1 and NC Math 2 with a D or low C.
- Math Plus (Honors):** Math Plus deepens the study of NC Math 1 concepts in order for students to be successful in future Honors level math courses. Students who take this course will take a teacher-made final exam. Math Plus counts as an elective credit. Students who enroll in Math Plus in the fall should also be enrolled in Honors NC Math 2 in the spring. If the feeder high school does not offer Math Plus, the student may consider retaking NC Math 1 in order to build a stronger foundation before proceeding to Honors NC Math 2.
- The University System requires students to take a 4th math course beyond NC Math 3. See the first column of the [Math Options Chart](#) for a list of acceptable courses. Note that locally developed math elective courses do **not** count towards the UNC System minimum admission requirements.
- Keep in mind that students are permitted to repeat a high school credit course to build a stronger foundation for future learning. This option is particularly helpful for students who struggled while taking NC Math 2 or NC Math 3 in middle school. Students wishing to do this should make a written request to their principal or principal's designee. When a student is repeating a course for credit, the following apply:
 - Students will receive a numerical grade and both grades will appear on the high school transcript.
 - For students who initially fail a course and repeat the full course and earn a passing grade:
 - Prior to 2015-16, both grades will count towards GPA calculation.
 - Beginning in 2015-16, the new course grade will replace the failing grade in GPA calculation.
 - For students who passed the course with minimal proficiency and are retaking it to build a stronger foundation:
 - Students will receive a numerical grade and both grades will appear on the high school transcript.
 - Both grades will count towards GPA calculation.
 - Students will not receive credit towards graduation for the second attempt with the course.
 - Only grades earned in high school are included in a student's high school GPA.
 - Students will take any associated End-of-Course (EOC) assessment. Those students who have already scored at Level 3, 4, or 5 on the associated EOC assessment may elect either to retake the EOC or use the previous passing EOC score as 20% of their final grade. If the student retakes the EOC, the higher of the two scores will be used in the calculation of the final grade.
- A student cannot receive math credit for both *NC Math 1* and *NC Math 1B*. One must count as an elective.
- A student cannot receive math credit for both *NC Math 2* and *Algebra II* or *Geometry*. One must count as an elective.



WAKE COUNTY PUBLIC SCHOOL SYSTEM Typical High School Math Course Sequences

The gray-shaded box indicates the last course the student must complete to satisfy graduation requirements. Courses in **BOLD** indicate a math credit. Courses not in bold indicate elective credit.

Typical Sequences for Academic Students under the Future Ready Core							
	Year 1		Year 2		Year 3		Year 4
A	Foundations of NC Math 1 (NC Math 1A) (20902X0)	NC Math 1B (21092X0B)	Foundations of NC Math 2 (20912X0)	NC Math 2 (22092X0)	Foundations of NC Math 3 (20922X0)	NC Math 3 (23092X0)	Advanced Functions & Modeling (24002X0) or Essentials for College Math (24082X0)
B	NC Math 1 (21092X0)		NC Math 2 (22092X0)		NC Math 3 (23092X0)		Advanced Functions & Modeling (24002X0) or Discrete Mathematics (24012X0)

Typical Sequences for Honors Students under the Future Ready Core						
	Year 1		Year 2	Year 3		Year 4
C	NC Math 1 (21092X0)		NC Math 2 (Honors) (22095X0)	NC Math 3 (Honors) (23095X0)		Precalculus (Honors) (24035X0)
D	Math Plus (Honors) (28005X0L)	NC Math 2 (Honors) (22095X0)	NC Math 3 (Honors) (23095X0)	Advanced Functions & Modeling (24002X0)		AP Statistics (2A037X0)
E	Math Plus (Honors) (28005X0L)	NC Math 2 (Honors) (22095X0)	NC Math 3 (Honors) (23095X0)	Precalculus (Honors) (24035X0)		AP Calculus AB/BC and/or AP Statistics*
F	NC Math 2 (Honors) (22095X0)		NC Math 3 (Honors) (23095X0)	Precalculus (Honors) (24035X0)		AP Calculus AB/BC and/or AP Statistics*
G	NC Math 3 (Honors) (23095X0)		Precalculus (Honors) (24035X0)	AP Calculus AB (25017X0)	AP Calculus BC (25027X0)	Math Analysis (28005X0) and/or AP Statistics*

*AP Statistics may also be taken in the same year as Precalculus.

Typical Sequences for Students Using the Math Substitution Option							
	Year 1		Year 2		Year 3		Year 4
H	Fundamental NC Math 1** (28002X0B)	Introductory Mathematics (20202X0)	Foundations of NC Math 1 (NC Math 1A) (20902X0)	NC Math 1B (21092X0B)	Foundations of NC Math 2 (20912X0)	NC Math 2 (22092X0)	Foundations of NC Math 3* (20922X0)
I	Introductory Mathematics** (20202X0)		Foundations of NC Math 1 (NC Math 1A) (20902X0)	NC Math 1B (21092X0B)	Foundations of NC Math 2 (20912X0)	NC Math 2 (22092X0)	Foundations of NC Math 3* (20922X0)
J	Foundations of NC Math 1** (NC Math 1A) (20902X0)	NC Math 1B (21092X0B)	Foundations of NC Math 2 (20912X0)	NC Math 2 (22092X0)	Foundations of NC Math 3* (20922X0)		NC Math 3* (23092X0)

*Students are encouraged to continue taking math courses through their senior year, but these courses are not required for graduation.

** Math courses are recommended as substitute courses for NC Math 3 and a 4th math course beyond NC Math 3; however, certain CTE (or pairs of CTE) courses may also be used to substitute for the two additional math credits. See your counselor for additional information.

High School Math Base Course Codes 2017-18

Course	Code	Scheduling Comments
Fundamental Math I (Elective)	28002X0B	This course replaces Foundations of Math I (Foundations of Algebra); it is intended for Level I students; it should be paired with Intro Math (20202X0) in the spring (on block).
Introductory Mathematics (Elective)	20202X0	This course is intended for Level II students.
Foundations of Math I (Elective)	20902X0	This course should be paired with Math IB (21032X0B).
Math IB	21092X0B	This course should be paired with Foundations of Math I (Math IA) (20502X0)
Math Plus (Honors) (Elective)	28005X0L	This course replaces Special Topics in Mathematics. This course is intended for students who took Math I in 8 th grade who are not ready for Honors Math II. It should be paired with Honors Math II (22015X0).
Math I	21092X0	
Foundations of Math II (Elective)	20912X0	
Math II	22092X0	
Math II (HONORS)	22095X0	
Foundations of Math III (Elective)	20922X0	
Math III	23092X0	
Math III (HONORS)	23095X0	
Essentials for College Math (SREB)	24082X0	
Advanced Functions and Modeling	24002X0	
Discrete Mathematics	24012X0	
Precalculus (Honors)	24035X0	
Trigonometry	28002X0C	Elective credit only
Introduction to College Mathematics (Honors)	28005X0H	Elective credit only
Mathematical Analysis (Honors)	28005X0J	Elective credit only
Advanced Placement Calculus: AB	2A007X0	
Advanced Placement Calculus: BC	2A017X0	
Advanced Placement Statistics	2A037X0	
Advanced Placement Computer Science	2A027X0	Elective credit only

Magnet Course Codes		
Integrated Math IV Honors	24025X0	
Magnet Projects in Mathematics (Honors)	28005X0A	Elective credit only
Magnet Intro Computer Science (Honors)	28005X0B	Elective credit only
Magnet Advanced Computer Science (Honors)	28005X0C	Elective credit only
Magnet Calculus III	28005X0E	Elective credit only
Magnet Differential Equations	28005X0G	Elective credit only
Magnet Topics in Calculus (Honors)	28005X0M	Elective credit only

Math Options Chart for students entering 9th grade in 2012-13 and beyond

Mathematics Graduation Requirements for Students

Effective for Freshmen Entering High School in 2012-2013 and BEYOND (Policy GCS-N-004 from <http://sbepolicy.dpi.state.nc.us/>)

Four mathematics credits* are required for graduation. A student's post-secondary school plans should help determine the student's mathematics sequence.

Math I (2103)



Math II (2201)



Math III (2301)



a 4th mathematics course taken from one of the three columns to the right



All Four Mathematics Credits for Graduation

* Four math credits do not have to include a fourth level math, but it is highly recommended that all students be given access to the highest levels of math.



The Policy listed above is the official State Board Education Policy on graduation requirements. The next four columns are intended as guidance and are subject to change based upon revisions to courses or standards at the high school and/or post-high school levels.

SEPTEMBER 2014

Courses accepted as the 4th Level mathematics credit for admission into UNC System institutions

NC Standard Course of Study Courses

- 2400 – Adv Functions and Modeling
- 2401 – Discrete Mathematics
- 2402 – Integrated Math IV
- 2403 – Pre-Calculus
- 2408 – Essentials for College Math (SREB READY)

Community College Courses

- 2722 – CCP-MAT172 – Precalculus Trigonometry
- 2723 – CCP-MAT271 – Calculus I
- 2724 – CCP-MAT171 – Precalculus Algebra
- 2C015 – MAT 143 – Quantitative Literacy
- 2C025 – MAT 152 – Statistical Methods I
- 2C055 – MAT 263 – Brief Calculus
- 2C075 – MAT 272 – Calculus II
- 2C115 – MAT 252 – Statistics II
- 2C125 – MAT 273 – Calculus III
- 2C135 – MAT 280 – Linear Algebra
- 2C145 – MAT 285 – Differential Equations
- 2C155 – MAT 141 – Mathematical Concepts I
- 2C165 – MAT 142 – Mathematical Concepts II
- 2C175 – MAT 167 – Discrete Math

AP and IB Courses

- 2501 – AP CALCULUS AB
- 2502 – AP CALCULUS BC
- 2511 – AP STATISTICS
- 2I008 – IB Computer Science SL
- 2I018 – IB Computer Science HL
- 2I028 – IB Mathematical Studies SL
- 2I038 – IB Mathematics SL
- 2I048 – IB Mathematics HL
- 2I058 – IB Further Math HL

Due to the Curriculum Improvement Project at the NC Community College system, many courses were revised or archived. If not on this list, but on a previous math options chart and taken prior to 2014-15 SY, they are still acceptable. This includes lab component for many of the archived courses. Most math labs were incorporated into the revised courses listed above. Some community colleges may still require a lab before the mandatory Summer 2015 switch. If your community college does, then it must be taken this final year.

Students Planning to Attend Other Colleges, a Community College, or a Technical School**

Any of the courses listed in the Dark Blue UNC System column OR

- 2407 – Probability & Statistics (2014-15 is last year of availability)
- 2406 – AMTEM-Mindset
- Special Topics in Math (2013-14 was last year of availability)

CTE Single Courses that equal 1 full math credit

- AP Computer Science (2521)
- Accounting I (BA10)
- Accounting II (BA20)
- Principles of Business and Finance (BF10)
- Drafting I (IC61)
- Drafting II Engineering (IV22)
- Drafting II Architectural (IC62)
- Carpentry I (IC21)
- Metals Manufacturing Technology I (IM41)
- Metals Manufacturing II (IM42)
- PLTW Biotechnical Engineering (TP24)
- PLTW Aerospace Engineering (TP25)
- PLTW Civil Engineering and Architecture (TP23)
- PLTW Introduction to Engineering Design (TP11)
- PLTW Computer Integrated Manufacturing (TP22)
- PLTW Principles of Engineering (TP12)
- PLTW Digital Electronics (TP21)
- PLTW Engineering Design and Development (TP31)
- Apparel & Textile Production I (FA31)
- Apparel & Textile Production II (FA32)
- Interior Design I (FI51)
- Interior Design II (FI52)
- Culinary Arts and Hospitality II (FH22)
- ProStart II (FH72)
- Principles of Technology I (TE21)
- Principles of Technology II (TE22)
- Computer Programming I (BP10)
- Computer Programming II (BP12)

Pairs of CTE Courses that equal 1 Math CREDIT

- SAS I (BP20) AND SAS II (BP22)
- Personal Finance (BF05) AND Entrepreneurship I (ME11)
- Electronics I (IM31) AND Electronics II (IM32)
- Masonry I (IC11) AND Masonry II (IC12)
- Introduction to Culinary Arts & Hospitality (FH20) AND Culinary Arts & Hospitality I (FH21)
- Game Art and Design (TS31) AND Advanced Game Art and Design (TS32)
- Electrical Trades I (IC 41) AND Electrical Trades II (IC42)
- Scientific and Technical Visualization I (TS21) AND Scientific and Technical Visualization II (TS22)
- Introduction to Culinary Arts & Hospitality (FH20) AND ProStart I (FH71)
- Carpentry II (IC22) AND Carpentry III (IC23)

** Not eligible for Multiple Measures entry with NC Community College System. Students using CTE courses to meet Math credit graduation requirements (Class of 2014 & beyond) will be required to complete math placement testing prior to enrolling in community college math courses.

Students Exempted by Principal from usual sequence (SUBSTITUTION)

MATH I AND MATH II

Plus two additional courses from choices below:

- 2020 – Introductory Mathematics
- 2050 – Foundations of Math I
- 2051 – Foundations of Math II
- 2052 – Foundations of Math III
- 2040 – Alternate Mathematics I
- 2041 – Alternate Mathematics II
- 2065 – Probability & Statistics
- Special Topics in Math (2013-14 was last year of availability)

OR

- AP Computer Science (2521)
- Accounting I (BA10)
- Accounting II (BA20)
- Principles of Business and Finance (BF10)
- Drafting I (IC61)
- Drafting II Engineering (IV22)
- Drafting II Architectural (IC62)
- Carpentry I (IC21)
- Metals Manufacturing Technology I (IM41)
- Metals Manufacturing II (IM42)
- PLTW Biotechnical Engineering (TP24)
- PLTW Aerospace Engineering (TP25)
- PLTW Civil Engineering and Architecture (TP23)
- PLTW Introduction to Engineering Design (TP11)
- PLTW Computer Integrated Manufacturing (TP22)
- PLTW Principles of Engineering (TP12)
- PLTW Digital Electronics (TP21)
- PLTW Engineering Design and Development (TP31)
- Apparel & Textile Production I (FA31)
- Apparel & Textile Production II (FA32)
- Interior Design I (FI51)
- Interior Design II (FI52)
- Culinary Arts and Hospitality II (FH22)
- ProStart II (FH72)
- Principles of Technology I (TE21)
- Principles of Technology II (TE22)
- Computer Programming I (BP10)
- Computer Programming II (BP12)

Students are NOT required to complete math credits in this option in any particular order. Students may take CTE or other courses prior to or concurrently with Math I and/or Math II. Additionally, students may also complete the Substitution sequence with two core mathematics courses plus one additional math course from above (pink) and one CTE course OR a pair of CTE courses from previous column (yellow) (pairs of CTE courses – 1 math credit).

Students Identified as Learning Disabled in Math

Students included in the category defined by NC General Statute § 115C-81(b) must complete four credits in mathematics. This legislation states that the State Board of Education shall not require Algebra I as a graduation standard for any student with an IEP (Individualized Education Plan) that: i) identifies the student as learning disabled in the area of mathematics and ii) states that this learning disability will prevent the student from mastering Algebra I.

These students should construct a four-course mathematics sequence using any combination of the courses listed in the preceding columns. Each student's course selections should be guided by his or her post-secondary goals, as defined in his/her IEP.

Students Following the Occupational Course of Study

- Introduction to Math I (S220B) AND Math I (S221B)

AND ONE of the following courses:

- Financial Management (S222B)
- Alternate Math II (2041)
- Personal Finance (BF05)

Students who complete the sequence above should be classified as Occupational Course of Study (OCS). These students may also complete a CTE concentration.

Example College Majors*

AFM	Discrete Math	Precalculus
<p>Accounting★ Agricultural Business Management★ Agricultural Science Animal Science★ Economics★ Elementary Education (STEM)★ Environmental Technology and Management★ Food Science★ Forest Management★ Horticultural Science Interdisciplinary Studies Nutrition Science★ Plant and Soil Sciences-Agribusiness★ Plant Biology★ Poultry Science★ Science, Technology, and Society★ Sustainable Materials & Technology★ Technology Education Technology, Engineering & Design Education Turfgrass Science★ Wood Products★</p> <p>These majors do not require more than a Precalculus and/or Elements of Calculus course, but may also include other technical math courses specifically within the major.</p>	<p>Africana Studies Anthropology Agricultural Education Environmental Design in Architecture Art & Design Arts Studies Business and Marketing Education★ Business Administration★ Communication Criminology★ Design Studies English Extension Education French Language and Literature German Studies Graphic Design History Industrial Design International Studies Leadership in the Public Sector Middle Grades Educ. – Lang. Arts & Soc. Studies Parks, Recreation and Tourism Management★ Philosophy Political Science★ Professional Golf Management★ Psychology★ Religious Studies Social Work★ Sociology★ Spanish Language & Literature Sport Management★ Women’s and Gender Studies</p> <p>These majors do not require a Precalculus or calculus-based math course, but may include other technical math courses specifically within the major.</p>	<p>Aerospace Engineering Agricultural and Environmental Technology★ Applied Mathematics★ Biochemistry★ Biological Sciences Biomedical Engineering★ Bioprocessing Science★ Chemical Engineering Chemistry★ Civil Engineering★ Computer Engineering★ Computer Science★ Construction Engineering & Management Electrical Engineering★ Environmental Engineering★ Environmental Sciences★ Fashion & Textile Design★ Fashion & Textile Management★ Genetics★ Geology Industrial Engineering★ Marine Science★ Materials Science & Engineering Mathematics★ Mathematics Education (MS & HS)★ Mechanical Engineering★ Meteorology★ Microbiology★ Nuclear Engineering Physics★ Polymer and Color Chemistry★ Science Education Statistics★ Textile Engineering★ Textile Technology★ Zoology★</p> <p>These majors require one or more semesters of Calculus.</p>

*based on information obtained from NC State University Office of Undergraduate Courses & Curricula 2015-16 <http://majorsandcareers.ncsu.edu/>

★ majors that require a Statistics course