August 8, 2013

TO   LEA Superintendents

FROM Rebecca B. Garland

MATH OPTIONS CHART CHANGES

Please find attached to this memo a revised Math Options Chart that reflects the following recent changes:

1. Revision of the standard math course sequence – The State Board of Education recently renamed the traditional mathematics options to Common Core Math I, Math II, and Math III, which is reflected in the "Core Mathematics Courses" portion of the charts. Please note that all freshman students entering in 2012-13 and receiving the first-level math instruction (Algebra I, Common Core Math I, or Integrated Math I) received instruction based upon Math I standards and will progress to Math II in 2013-14.

2. Addition of high school diploma endorsements – Per the requirements of Session Law 2013-1 and State Board of Education policy GCS-L-007, students graduating in 2014-15 are eligible to earn one or more diploma endorsements. The revised chart includes information about endorsements associated with each math sequence.

3. Expansion of courses suitable to fulfill the fourth math requirement – For students planning to attend a community college, technical school, or non-UNC System college or university, the chart includes an expanded list of application-based CTE courses and pairs of CTE courses that can be used to meet the fourth math requirement for graduation purposes. Please note that some courses have also been removed, and pay special attention to the note on page 3 regarding the use of CTE courses to fulfill the fourth math and the NC Community College System's "Multiple Measures" policy.

4. Elimination of the Future Ready Core (FRC) code – Previously, FRC codes in NC WISE and on the student transcript identified a student's graduation plan as well as CTE concentrators. The switch to PowerSchool eliminates the FRC code in favor of a series of indicators in the student record that will indicate status with respect to the following:

   a. Math Rigor

   "Yes" indicates students who complete the traditional Math I, Math II, Math III (or Algebra I, Geometry, Algebra II) sequence;

   "No" indicates those who do not (for instance, those students who take a substitution math sequence or students in the Occupational Course of Study).

b. CTE Concentrator

"Yes" indicates those students who complete a four-course CTE concentration with one course at Level 2;

"No" indicates all others.

c. Endorsement(s)

"College – UNC" indicates students meeting the requirements for admission to a UNC System university;

"College" indicates students meeting requirements for admission to a non-UNC System university or college, the community college system or a technical school admission (requirements vary);

"Career" indicates students who meet the requirements of the Career endorsement (completing a CTE Concentration *plus* earning either a WorkKeys certification at the Silver level or above, or another industry-recognized credential).

Students may graduate from high school with only one of the above endorsements, or with a combination of the following:

"College – UNC" *and* "Career"; or

"College" *and "*Career" endorsement

Students may also graduate with no endorsements noted on their diploma and transcript. These endorsements may also be earned in combination with the long-standing Academic Scholars endorsement.

If you have additional questions or concerns, please contact Rob Hines at 919.807.3244 or rob.hines@dpi.nc.gov and he will ensure your questions are addressed.

Attachment

c: Curriculum and Instructional Leaders
        Secondary Principals
        Data Managers

Mathematics Graduation Requirements for Students Planning to Apply for Entry to a UNC System University

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

All freshman students entering in 2012-13 and receiving the first-level math instruction (Algebra I, Common Core Math I, or Integrated Math I) received instruction based upon Math I standards and will progress to Math II in 2013-14.

Four mathematics credits are required for graduation. A student's post-secondary school plans should help determine the student's mathematics sequence. Students planning to apply for entry to a University of North Carolina System university should complete a mathematics sequence constructed from the following courses:

Core Mathematics Courses				
Algebra I (2023) and Geometry (2030) and Algebra II (2024)	OR	Common Core Math I (2032) and Common Core Math II (2033) and Common Core Math III (2034)	OR	Integrated Math I (2051) and Integrated Math II (2052) and Integrated Math III (2053)

PLUS, a fourth mathematics course from the table below:

Courses accepted as the fourth math for admission to UNC System institutions	
NC Standard Course of Study Math Courses[1]	*Community College Mathematics Courses[2]*
Advanced Functions and Modeling (2025) Discrete Mathematics (2050) Pre-Calculus (2070) Integrated Mathematics IV (2054) AP Statistics (2066) AP Calculus (AB) (2076) AP Calculus (BC) (2077)	MAT 155 (2063) *and* MAT 155A (2499) (Statistical Analysis) MAT 165 (2063) *and* MAT 165A (2499) (Finite Mathematics) MAT 171 (2044) *and* MAT171A (2499) (Pre-Calculus Algebra) **PLUS** MAT 172 (2042) *and* MAT 172A (2499) (Pre-Calculus Trigonometry) MAT 175 (2070) *and* MAT 175A (2499) (Pre-Calculus) MAT 252 (2063) *and* MAT 252A (Statistics II) MAT 271 (2043) *and* MAT 271A (2499) (Calculus I) MAT 272 (2063) *and* MAT 272A (2499) (Calculus II)

Note: *Beginning with the class of 2014-15*:

1. Students who complete the sequence above, earn two credits in the same world language, and graduate with a 2.6 (or higher) un-weighted grade point average will receive the *College – UNC* endorsement on their diploma.
2. Students who complete the math sequence above and graduate with a 2.6 (or higher) un-weighted grade point average but do not complete the world language sequence will receive the *College* endorsement on their diploma.
3. Students who complete the math sequence above but graduate with an un-weighted grade point average below 2.6 will not receive an endorsement on their diploma.
4. All students also have the option to complete a four-course Career and Technical Education concentration *in addition* to the sequence above and/or receive the *Career* endorsement.
5. Endorsements and CTE Concentrator status will print on the student's transcript.

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[1] International Baccalaureate (IB) courses equivalent to the Advanced Placement (AP) courses are also acceptable for UNC admissions purposes.
[2] Must be taken in conjunction with the associated lab course to be accepted as the fourth math for admission to UNC institutions.

Mathematics Graduation Requirements for Students Planning to Attend Other Colleges, a Community College, or a Technical School

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

All freshman students entering in 2012-13 and receiving the first-level math instruction (Algebra I, Common Core Math I, or Integrated Math I) received instruction based upon Math I standards and will progress to Math II in 2013-14.

Four mathematics credits are required for graduation. A student's post-secondary school plans should help determine the student's mathematics sequence. Students planning to apply for entry to a community college or technical school should complete a mathematics sequence constructed from the courses outlined below. This course sequence *may* also be suitable for students planning to apply for entry to a public or private university or college *other than* a UNC system institution. Counselors are advised to work with students interested in four-year, non-UNC system colleges and universities to determine whether this sequence meets minimum admission requirements.

Core Mathematics Courses				
Algebra I (2023) and Geometry (2030) and Algebra II (2024)	OR	Common Core Math I (2032) and Common Core Math II (2033) and Common Core Math III (2034)	OR	Integrated Math I (2051) and Integrated Math II (2052) and Integrated Math III (2053)

PLUS, a fourth mathematics course selected from the tables below:

Courses suitable for meeting the fourth math for high school graduation	
NC Standard Course of Study Math Courses	*Community College Mathematics Courses[3] (use high school course code shown)*
Any SCoS course from page 1, *OR* Analytical Geometry (2031) Trigonometry (2041) Probability & Statistics (2065) Mindset (2045)	Any CC math course from page 1, *OR* MAT 151 (2035) (Statistics I) MAT 161 (2028) (College Algebra) Special Topics courses, including: MAT 162 (2063) (College Trigonometry) MAT 167 (2063) (Discrete Mathematics) MAT 210 (2063) (Logic) MAT 263 (2063) (Brief Calculus) MAT 273 (2063) (Calculus III) MAT 280 (2063) (Linear Algebra) MAT 285 (2063) (Differential Equations)

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[3] An additional math lab may be required to meet Community College credit requirements.

Courses suitable for meeting the fourth math for high school graduation, continued	
Application-based CTE Courses acceptable for the 4th Math[4]	*<u>Pairs</u> of application-based CTE Courses acceptable for the 4th Math[5]*
Accounting I Accounting II Principles of Business and Finance Carpentry I Drafting I Drafting II – Engineering Drafting II – Architectural AP Computer Science Principles of Technology I Principles of Technology II Apparel I Apparel II Enterprise Interior Design I Interior Design II Culinary Arts and Hospitality II ProStart II Computer Programming I Computer Programming II Metals Manufacturing I Metals Manufacturing II PLTW Introduction to Engineering Design PLTW Principles of Engineering PLTW Digital Electronics PLTW Computer Integrated Manufacturing PLTW Civil Engineering and Architecture PLTW Biotechnical PLTW Aerospace Engineering PLTW Engineering Design & Development	SAS I & SAS II Personal Finance & Entrepreneurship I Electronics I & Electronics II Masonry I & Masonry II Introduction to Culinary Arts and Hospitality & Culinary Arts and Hospitality I Game Art and Design & Advanced Game Art and Design Electrical Trades I & Electrical Trades II Scientific and Technical Visualization I & Scientific and Technical Visualization II Introduction to Culinary Arts and Hospitality & ProStart I Carpentry I & Carpentry II

Note: *Beginning with the class of 2014-15:*

1. Students who complete the sequence above and graduate with a 2.6 (or higher) un-weighted grade point average will receive the *College* endorsement on their diploma.
2. Students who complete the math sequence above but graduate with an un-weighted grade point average below 2.6 will not receive an endorsement on their diploma.
3. All students also have the option to complete a four-course Career and Technical Education concentration *in addition* to the sequence above and/or receive the *Career* endorsement.
4. Endorsements and CTE Concentrator status will print on the student's transcript.

Important: Beginning with the graduating class of 2014, students who choose to use a CTE course or pair of CTE courses to meet the fourth math requirement will NOT be eligible for the NC Community College System's "Multiple Measures" placement policy and will be required to complete a mathematics assessment prior to enrolling in a credit-bearing community college mathematics course.

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[4] If a student chooses to use CTE courses to meet mathematics requirements, then the course(s) also count for credit in meeting the completion of a career cluster.
[5] Both courses must be completed successfully to receive one math credit.

Mathematics Graduation Requirements for Students Exempted from the Usual Future-Ready Sequence (Substitution)

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

All freshman students entering in 2012-13 and receiving the first-level math instruction (Algebra I, Common Core Math I, or Integrated Math I) received instruction based upon Math I standards and will progress to Math II in 2013-14.

Four mathematics credits are required for graduation. A student's post-secondary school plans should help determine the student's mathematics sequence. In the rare instance a principal exempts a student from the usual Future-Ready Core mathematics sequence, the student must pass two core mathematics courses and two other mathematics courses, or two CTE courses as defined below.

Core Mathematics Courses					
Algebra I (2023) and Geometry (2030)	OR	Common Core Math I (2032) and Common Core Math II (2033)	OR	Integrated Math I (2051) and Integrated Math II (2052)

PLUS, two additional mathematics courses from the table below:

Two mathematics courses from the list below		Pairs of CTE courses that may substitute as mathematics courses[6]
Introductory Mathematics (2020) Foundations of Algebra (2018) Foundations of Geometry (2029) Foundations of Advanced Algebra (2019) Alternate Mathematics I (2026) Alternate Mathematics II (2027) Analytical Geometry (2031) Trigonometry (2041) Probability & Statistics (2065) Special Topics in Math (2063; choose from any of the following community college courses): • MAT 162 (College Trigonometry) • MAT 167 (Discrete Mathematics) • MAT 210 (Logic) • MAT 263 (Brief Calculus) • MAT 273 (Calculus III) • MAT 280 (Linear Algebra) • MAT 285 (Differential Equations)	OR	• *Accounting I (6311) and II (6312)* • *Drafting I (7921) and II (7972 or 7962)* • *Computer Programming I (6421) and II (6422)* • *Principles of Business and Finance (8721) and Entrepreneurship I (8716)* • *Personal Finance (8726) and Entrepreneurship I (8716)* • *Apparel I (7035) and II (7036)* • *Interior Design I (7151) and II (7152)* • *Principles of Technology I (8011) and II (8012)* • *PLTW Intro to Engineering Design (8020) and PLTW Principles of Engineering (8021)* • *Carpentry I (7721) and II (7722)* • *Electrical Trades I (7741) and II (7742)* • *Electronics I (7631) and II (7632)* • *Metals Manufacturing Technology I (7641) and II (7642)* • *Culinary Arts & Hospitality I (7121) and II (7122)* • *Intro to Culinary Arts & Hospitality (7120) and Culinary Arts & Hospitality I (7121)*

NOTE: Students are NOT required to complete a sequence from above in any particular order. Students may take CTE or other courses prior to or concurrently with "core" mathematics classes. Additionally, students may also complete the Substitution sequence with two core mathematics courses plus one course from the left column and one course from the right hand column, or any two courses from the table on Page 3.

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[6] It is important for their career development that students take both levels in a course sequence. It would be inappropriate to take two Level I CTE courses for the two alternative math credits.

Mathematics Graduation Requirements for Students Identified as Learning Disabled in Math

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

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 on the previous pages. *Each student's course selections should be guided by his or her post-secondary goals, as defined in his/her IEP.*

Mathematics Graduation Requirements for Students Following the Occupational Course of Study

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

State Board of Education policy GCS-N-004 allows eligible students entering as freshman to participate in the Occupational Course of Study. Students undertaking this course of study must complete three credits in mathematics and should construct a three-course sequence using courses from the tables below.

Foundational mathematics course
Occupational Course of Study Introduction to Mathematics (9220)

PLUS one core mathematics course:

Core mathematics courses		
Occupational Course of Study Algebra I (9221)	*OR*	Integrated Math I (2051)

PLUS one Application-based mathematics course:

Application-based mathematics courses				
Occupational Course of Study Financial Management (9222)	*OR*	Alternate Math II (2027)	*OR*	Personal Finance (8726)

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