



NCDPI Mathematics

**Secondary Updates
Curriculum & Instruction Directors
September 16, 2014**

**Jennifer L. Curtis, Ed.D.
K-12 Section Chief Mathematics**



Introduction



- Background guiding the work
- One year ago
- Goals for today's session
- Q & A

Topics



- Southern Regional Education Board (SREB) fourth math course implementation
- Graduation Requirements – new math options chart
- Achieve’s EQUiP Rubric
- Principles to Action – Your principals taking action through Principal READY

Topics Continued



- Textbook Adoption
- Other Resources
- What we are working on for release
- Questions

SREB Essentials for College Math



- Completed 7 regional trainings - More to come
- Program Eval – UNC & SEDL
- EMPT (Early Mathematics Placement Testing)
- Acceptable for UNC admission – should be entering in field other than STEM, but can switch

Graduation Requirements



- Refer to Policy GCS-N-004
- Technical language change coming – “Integrated Math I” to “Math I” soon
- Addressing the four credits in mathematics needed for graduation – what’s changed
- 4th credit does NOT have to equal 4th LEVEL mathematics

New Options Chart



Mathematics Graduation Requirements for Students

Effective for Freshmen Entering High School in 2012-2013 and BEYOND (Policy GCS-N-004 from <http://shgpolicy.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 of 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	Students Planning to Attend Other Colleges, a Community College, or a Technical School**	Students Exempted by Principal from usual sequence (SUBSTITUTION)	Students Identified as Learning Disabled in Math
<p>NC Standard Course of Study Courses</p> <ul style="list-style-type: none"> • 2400 – Adv Functions and Modeling • 2401 – Discrete Mathematics • 2402 – Integrated Math IV • 2403 – Pre-Calculus • 2408 – Essentials for College Math (SREB READY) <p>Community College Courses</p> <ul style="list-style-type: none"> • 2722 – CCP-MA1172 – Precalculus Trigonometry • 2723 – CCP-MA1711 – Calculus I • 2724 – CCP-MA1711 – Precalculus Algebra • 2C015 – MAT 143 – Quantitative Literacy • 2C025 – MAT 152 – Statistical Methods I • 2C035 – MAT 202 – 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 <p>AP and IB Courses</p> <ul style="list-style-type: none"> • 2501 – AP CALCULUS AB • 2502 – AP CALCULUS BC • 2511 – AP STATISTICS • 21008 – IB Computer Science SL • 21018 – IB Computer Science HL • 21029 – IB Mathematical Studies SL • 21038 – IB Mathematics SL • 21049 – IB Mathematics HL • 21058 – IB Further Math HL 	<p>Any of the courses listed in the Dark Blue UNC System column OR</p> <ul style="list-style-type: none"> • 2407 – Probability & Statistics (2014-15 is last year of availability) • 2406 – AMTEM-Mindsat • Special Topics in Math (2013-14 was last year of availability) <p>CTE Single Courses that equal 1 full math credit</p> <ul style="list-style-type: none"> • AP Computer Science (2521) • Accounting I (BA10) • Accounting II (BA20) • Principles of Business and Finance (BF10) • Drafting I (IC81) • Drafting II Engineering (IV22) • Drafting II Architectural (IC82) • 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 (BP16) • Computer Programming II (BP12) <p>Pairs of CTE Courses that equal 1 Math CREDIT</p> <ul style="list-style-type: none"> • SAS I (BP20) AND SAS II (BP22) • Personal Finance (BF16) AND Entrepreneurship I (ME11) • Electronics I (IM21) AND Electronics II (IM22) • 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) 	<p>MATH I AND MATH II</p> <p>Plus two additional courses from choices below:</p> <ul style="list-style-type: none"> • 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) <p>OR</p> <ul style="list-style-type: none"> • AP Computer Science (2521) • Accounting I (BA10) • Accounting II (BA20) • Principles of Business and Finance (BF10) • Drafting I (IC81) • Drafting II Engineering (IV22) • Drafting II Architectural (IC82) • 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) • 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 (BP16) • Computer Programming II (BP12) 	<p>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.</p> <p>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.</p> <p>Students Following the Occupational Course of Study</p> <ul style="list-style-type: none"> • Introduction to Math I (S226) AND Math I (S218) <p>AND ONE of the following courses:</p> <ul style="list-style-type: none"> • Financial Management (S228) • Alternate Math II (2041) • Personal Finance (BF16) <p>Students who complete the sequence above should be classified as Occupational Course of Study (OCS). These students may also complete a CTE concentration.</p>
<p><small>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.</small></p> <p><small>** 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.</small></p> <p><small>S 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).</small></p>			

Fall Professional Development



- Fall RESA sessions for both elementary and secondary - Achieve's EQUIP Rubric
- Will change the culture in your PLC/buildings
- Insures lessons and units are aligned to standards including math practice standards
- Encourage implementation

Equip Trainings Fall



SUBJECTS.

When:

Region 1- November 1, 2014

Region 5- September 23, 2014

Region 2- September 11, 2014

Region 6- September 19, 2014

Region 3- September 25, 2014

Region 7- October 7, 2014

Region 4- October 15, 2014

Region 8- October 1, 2014



Principles to Actions: Ensuring Mathematical Success for All



We are learning to:

Recognize those aspects of instructional practice that provide high leverage in strengthening and furthering students' success in learning of mathematics.



Principles to Actions



- Being shared with principals through Principal READY meetings in all regions
- Begins tomorrow in Fayetteville
- Will be topic for Spring RESA for teachers and leaders of mathematics
- E-book download is only 3.99 for NCTM members and 4.99 for all others

Principles to Actions: Ensuring Mathematical Success for All



Mathematics Teaching Practices

- Establish mathematics goals to focus learning.
- Implement tasks that promote reasoning and problem solving.
- Use and connect mathematical representations.
- Facilitate meaningful mathematical discourse.
- Pose purposeful questions.
- Build procedural fluency from conceptual understanding.
- Support productive struggle in learning mathematics.
- Elicit and use evidence of student thinking.

Teaching Practices vs. Practice Standards



- Teacher behaviors vs. student behaviors
- Careful to avoid confusion
- Math Practice Standards are standards that students strive to achieve
- Math Teaching Practices are what teachers should embrace and implement so students can achieve

Textbook Adoption

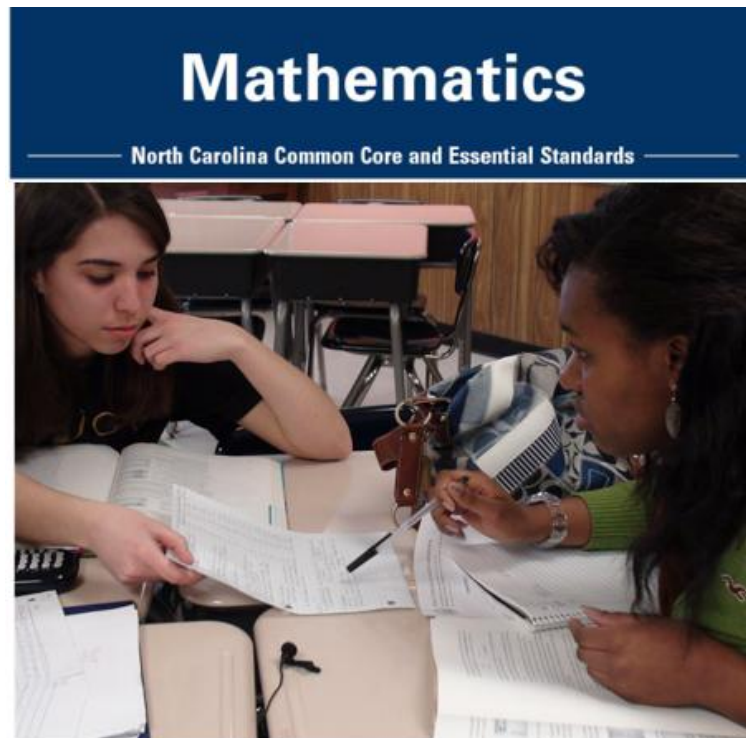


- Textbook list approved at last State Board of Education (SBE) Meeting
- Very few secondary submissions – some large publishers did not submit
- Does not interfere with your ability to purchase others
- List is a vetted, price-negotiated list

Other Resources



- to <http://maccss.ncdpi.wikispaces.net/Home>



*** FOCUS * * COHERENCE * * RIGOR ***

<https://sites.google.com/site/greatccsmathresources/>



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What do the Standards Mean?	
Illustrative Mathematics	www.illustrativemathematics.org
Mathematics Progressions Documents	http://ime.math.arizona.edu/progressions
EDC – Implementing the Practices	http://mathpractices.edc.org/
Achieve, Inc.	http://www.achieve.org/achieving-common-core
Turn on Common Core Math	http://turnonccmath.net
Lessons, Lesson Ideas and Lesson Plans	
Learn Zillion	www.learnzillion.com
Inside Mathematics	www.insidemathematics.org
NCTM Illuminations	www.illuminations.nctm.org
Mathalicious	www.mathalicious.com
Dan Meyer's 3-Act Lessons	https://docs.google.com/spreadsheet/ccc?key=0AjIqyKM9d7ZYdEhtR3BJMmdBWnM2YWxWYVM1UWowTEE
Thinking Blocks	www.thinkingblocks.com
Yummy Math	www.yummymath.com
Engage New York	www.engageny.org/mathematics
Mathematics Vision Project	http://www.mathematicsvisionproject.org
Emergent Math	http://emergentmath.com/my-problem-based-curriculum-maps
Achieve EQuIP Exemplars	http://www.achieve.org/EQuIP
Khan Academy	www.khanacademy.com
Robert Kaplinsky Lessons	http://robertkaplinsky.com/lessons
K-5 math teaching resources	http://www.k-5mathteachingresources.com
Tools	
National Library of Virtual Manipulatives	http://nlvm.usu.edu/en/nav/vlibrary.html
Desmos	www.desmos.com
Geogebra	www.geogebra.org
Conceptua Math	www.conceptuamath.com

Brand new, updated or coming soon



Elementary:

K- 5 games revised,

K-2 games vetted and posted last Friday;

K- 2 assessments revised and field tested yesterday – will be on secure district wiki this week

Brand new, updated or coming soon



Secondary:

Progression Documents – continuing the math through Math I, II and III

Fourth Course Indicators – new and improved, worked with testing to provide examples of standards in AFM etc.

Unpacking guides – new looks and revisions for Math I, II and III

Questions...

