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Middle Grades Education and High School Graduation Requirements

Background Information

HSP-N-004 specifies that mathematics courses taken to meet North Carolina requirements for high school graduation must be completed during grades 9-12.

In North Carolina, students may complete high school courses in middle school. If a middle school student completes a high school course that requires an End of Course (EOC) test, the student must take the EOC for that course. The course appears on the high school transcript, but the student is required to complete the same number of courses toward high school graduation as the student not taking high school courses in the middle grades.

More Rigorous Content in Middle Grades

Research supports more rigorous content at the middle grades. Three current documents summarize international and national trends in mathematics:

Research Study	Summary
Schmidt, W. H., Wang, H. C., & McKnight, C. (2005). <i>Curriculum coherence: an examination of US mathematics and science content standards from an international perspective.</i> Journal of Curriculum Studies, 37(5), 525-559.	<i>This article is an example of many analyses of the TIMSS data that make a case for a more coherent and rigorous mathematics curriculum, especially in grades K-8. Note that most countries in the TIMSS begin secondary mathematics topics in grade 7 and the curriculum is an integrated sequence of topics. This is in contrast to the common curriculum sequence in the United States of 7th and 8th grade mathematics followed by discrete courses in Algebra I, Geometry, Algebra II, and higher levels of mathematics.</i>
Newton, J., Larnell, G., & Lappan, G. (2006). <i>Analysis of K-8 Algebra Grade-Level Learning Expectations.</i> In B. Reys (Ed.), <i>The intended mathematics curriculum as represented in state-level curriculum standards : consensus or confusion?</i> (pp. 59-87). Greenwich, CT: Information Age Pub. Inc.	<i>This report summarizes a cross-state analysis of middle grades mathematics standards in the strand of algebra. According to the report, there is some agreement across the United States regarding which topics should be taught but little consensus regarding grade level placement of topics that should be taught. These findings concur with the TIMSS data mentioned in the Schmidt article.</i>
National Council of Teachers of Mathematics. (2006). <i>Curriculum focal points for prekindergarten through grade 8 mathematics: a quest for coherence.</i> Reston, VA: The National Council of Teachers of Mathematics.	<i>This publication of the National Council of Teachers of Mathematics (NCTM) suggests focus areas for K-8 Mathematics standards.</i>

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Algebra I & Middle Grades The 2003 revision of the *North Carolina Standard Course of Study for Mathematics* (Grades 6, 7, and 8) contains many of the objectives that were formerly in the 1998 revision of the *North Carolina Standard Course of Study for Mathematics*. In other words, North Carolina’s current standards for middle grades mathematics are much more rigorous than they were prior to 2003. Approximately 60% of the 1998 Algebra I objectives were transitioned into the 2003 Middle Grades objectives.

Policies in other States An informal survey of other states’ policies regarding students taking high school courses (specifically Algebra I) in middle grades was conducted by reviewing websites and email queries to other State Agency staff.

What Other States Are Doing With High School Math Courses Taken Before Grade 9?			
State	High School Math/Alg.1 before Grade 9?	High School Graduation Credit Awarded?	Comments
CA	Yes	Yes	<ul style="list-style-type: none"> •Students must complete 2 years of mathematics in grades 9-12.
DE	Yes	Yes	<ul style="list-style-type: none"> •Currently 3 math credits are required for graduation with at least 2 of the three being taken in grades 9-12. •4 credits will be required effective with the class of 2011. 4 credits will be required effective with the class of 2011. •Current 8th graders will be required to take a math class their senior year.
GA	Local Decision	Local Decision	<ul style="list-style-type: none"> •Students must take 4 years of mathematics in high school.
IN	Yes	Local Decision	<ul style="list-style-type: none"> •For the general diploma, students have to earn at least 4 credits in grades 9-12. •For the honors diploma, students have to take at least one year of math or physics in their last two years of high school.
KY	Yes	Yes	<p>Currently</p> <ul style="list-style-type: none"> •The teacher must be certified in math to give high school credit. If credit is given, it can be one of the three credits to graduate. •The student must demonstrate mastery of the middle level content as specified in the Program of Studies. The district must have placement criteria in place. <p>The following amendments are proposed for the graduating class of 2012:</p>

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What Other States Are Doing With High School Math Courses Taken Before Grade 9?			
State	High School Math/Alg.1 before Grade 9?	High School Graduation Credit Awarded?	Comments
			<ul style="list-style-type: none"> •High schools must accept credit toward high school graduation for high school coursework taken by students in grade 5, 6, 7, or 8. • Students must take mathematics every year in grades 9-12.
LA	Yes	Yes	<ul style="list-style-type: none"> •Students receive graduation credit if the teacher is certified to teach high school math. If not, students must take a state End-Of-Course exam.
MA	Local Decision	Local Decision	
ME	Local Decision	Local Decision	
MI	Yes	Yes	<ul style="list-style-type: none"> •"Testing Out" is an option to demonstrate that a student meets or exceeds the content expectations associated with the subject credit area and the earned credit counts as a required credit for graduation and reduces the number of credits required.
MO	Yes	Yes	
NY	Yes	Yes	<ul style="list-style-type: none"> •District staff decides whether a student has demonstrated readiness to begin high school courses in the 8th grade. •Students may receive up to 6.5 credits toward graduation without taking the courses with staff determination, a score of at least 85% on the state examination, and meeting other school requirements such as labs, special projects, or oral examinations.
OH	Yes	Yes	
OK	Yes	Yes	<ul style="list-style-type: none"> •Graduation credit is not received if the course is taken prior to Grade 7. •Effective with this year's 7th graders, students must have three years of mathematics between grades 9-12.
SC	Yes	Yes	
TX	Yes	Yes	<ul style="list-style-type: none"> •Students may receive credit-by-examination and there is no limit to the number of course credits students may earn by credit-by-examination. •While students may take and pass a high school level course in 8th grade and retake it in high school, both grades are recorded but the district determines which grade will receive graduation credit.
VA	Yes	Yes	
WA	Yes	Yes	<ul style="list-style-type: none"> •If requested by the student and his/her family, a student who has completed high school courses before attending high school shall be given high school credit which shall be applied to fulfilling high school graduation requirements.

Middle Grades Education and High School Graduation Requirements

Issues

The following are two of the most critical issues relating to students taking a high school Algebra I course in middle school:

Readiness/Placement into Algebra I

Any middle grades student who enrolls in Algebra I must be adequately prepared for success, including demonstrated mastery of the current standards for Grade 8 mathematics. The prerequisite skills for Algebra I as outlined in the *North Carolina Standard Course of Study* for Mathematics adopted by the State Board of Education in 2003 are as follows:

- Operate with the real numbers to solve problems.
- Find, identify, and interpret the slope and intercepts of a linear relation.
- Visually determine a line of best fit for a given scatterplot; explain the meaning of the line; and make predictions using the line.
- Collect, organize, analyze, and display data to solve problems.
- Apply the Pythagorean Theorem to solve problems.

Each of these prerequisite skills is found in the middle grades mathematics standard course of study. In particular, each of these is addressed in the 8th grade year.

A Case for four years of mathematics during high school years

A report by Adelman (2006) makes the case that most students should complete four years of mathematics during high school with the minimum completion being one mathematics course beyond Algebra II (or Integrated Mathematics III). [Adelman, C. (2006). THE TOOLBOX REVISITED Paths to Degree Completion from High School Through College. Retrieved 11/4/06, from

<http://www.ed.gov/rschstat/research/pubs/toolboxrevisit/toolbox.pdf>

Recommendation

The following amendment is recommended for HSP-N-004:

- (e) In addition to the requirements of Paragraph (a), students must successfully complete 20 course units in grades 9-12.

Students who pass courses during grades 6-8 that are described in the *North Carolina Standard Course of Study for Grades 9-12* must achieve level 3 or 4 on an EOC, if available, in order to be given credit for meeting that high school graduation requirement.

High school courses taken in grades 6-8 which do not have an EOC must use high school course codes, must be aligned to the *North Carolina Standard Course of Study for Grades 9-12*, and will be subject to review.

Students must complete at least one unit of mathematics credit in their ~~senior~~ final year. The 20 course units in grades 9-12 are specified below. This policy will go into effect with the freshman class of 2008.

**NORTH CAROLINA STATE BOARD OF EDUCATION
Policy Manual**

Policy Identification

Priority: High Student Performance

Category: Course for Credit

Policy ID Number: HSP-M-001

Policy Title: Policy defining "Course for Credit"

Current Policy Date: 11/04/2004

Other Historical Information: Previous board dates: 05/05/1988, 08/02/2001, 02/07/2002, 12/05/2002, 07/01/2004

Statutory Reference: GS 115C-81

Administrative Procedures Act (APA) Reference Number and Category:

A credit course, one for which credit toward high school graduation is awarded and which qualifies as part of the instructional day:

- must consist of 150 clock hours of instruction in a traditional schedule or
- must consist of a minimum of 135 clock hours of instruction in a block schedule; developed curriculum guides, or Advanced Placement syllabi in which high school students are enrolled; and
- must be directed by a teacher.

Public University, Community College, and Private College Courses

- Courses taken for high school graduation requirements at community colleges and private or public colleges/universities are exempt from the 135 or 150 instructional hours with the exception of the following courses required for high school graduation, which must be taken at the high school:
 - English I, II, III, IV;
 - Algebra I, Algebra II, Geometry, and any higher level mathematics course with Algebra II as the prerequisite that will be used to fulfill the fourth mathematics requirement OR Integrated Mathematic I, II, III;
 - Biology, Earth/Environmental Science, and a physical science course that is used to fulfill the third science requirement;
 - ~~Government/Economics (ELPS)~~ Civics and Economics, US History, World Studies;
 - first year of a Second Language;
 - second year of the same Second Language; and
 - one credit of Health/Physical Education.

- Each local superintendent may grant a waiver to allow students to take the courses listed above at the Public University, Community College, and Private College and exempt them from the 135 or 150 instructional hour requirement, if these courses are not available to the student at his or her local high school. Courses taken at a Community College that have a corresponding end-of-course assessment at the high school require that the assessment be taken.
- Each local superintendent shall ensure that all required and elective courses have sufficient rigor, breadth, and depth to be awarded high school credit.

An online course qualifies for course credit if it meets the following requirements:

- The NC Standard Course of Study competency goals and objectives must be adopted, where available. Nationally validated standards for AP and IB must be used, where available.
- In the absence of a Standard Course of Study curriculum, the course must be designed such that a typical student would take 135-150 hours to complete. The principal, in consultation with a teacher certified in that content area, is ultimately accountable for determining whether the course is of sufficient depth and breadth and meets the state and/or nationally developed criteria for awarding credit.
- Where available, end-of-grade tests, end-of-course tests, and post assessment must be used as an indicator of student mastery.
- Where statewide assessments are not available, the course must be DPI staff-and/or peer-evaluated before posting.

Credit may not be awarded for school bus driving, office assistance, teacher assistance, or laboratory assistance.

This policy will become effective with the 2004-05 school year.

**NORTH CAROLINA STATE BOARD OF EDUCATION
Policy Manual**

Policy Identification

Priority: High Student Performance

Category: Student Accountability Standards/Graduation Requirements

Policy ID Number: HSP-N-004

Policy Title: 16 NCAC 6D .0503 State graduation requirements

Current Policy Date: 01/05/2006

Other Historical Information: Previous board dates: 12/01/1999, 05/04/2000, 06/01/2000, 07/12/2001, 10/04/2001, 03/07/2002, 05/02/2002, 07/11/2002, 06/03/2004, 01/06/2005, 10/06/2005,

Statutory Reference: GS 115C-12(9b); GS 115C-81(b)(4); NC Constitution, Article IX, Section 5

Administrative Procedures Act (APA) Reference Number and Category: 16 NCAC 6D .0503

.0503 STATE GRADUATION REQUIREMENTS

- (a) In order to graduate and receive a high school diploma, public school students shall meet the requirements of paragraph (e) and shall attain passing scores on competency tests adopted by the SBE and administered by the LEA. The passing score for the competency test, which is the same as grade-level proficiency as set forth in Rule .0502 of this Subchapter, shall be level III or higher.
- (b) Students who satisfy all state and local graduation requirements but who fail the competency tests shall receive a certificate of achievement and transcript and shall be allowed by the LEA to participate in graduation exercises.
- (c) Special education students other than students who are following the occupational course of study in paragraph (e)(1)(D) of this Rule may apply in writing to be exempted from taking the competency tests. Before it approves the request, the LEA must assure that the parents, or the child if aged 18 or older, understand that each student must pass the competency tests to receive a high school diploma.
- (d) Any student who has failed to pass the competency tests by the end of the last school month of the year in which the student's class graduates may receive additional remedial instruction and continue to take the competency tests during regularly scheduled testing until the student reaches maximum school age. Special education students who are following the occupational course of study in paragraph (e)(1)(D) of this Rule shall not be required to pass the competency test or the exit exam referred to in 16 NCAC 6D .0502(d)(2) in order to graduate and receive a diploma.

- (e) In addition to the requirements of Paragraph (a), students must successfully complete 20 course units in grades 9-12. ~~as specified below.~~

Students who pass courses during grades 6-8 that are described in the *North Carolina Standard Course of Study for Grades 9-12* must achieve level 3 or 4 on an EOC, if available, in order to be given credit for meeting that high school graduation requirement.

High school courses taken in grades 6-8 which do not have an EOC must use high school course codes, must be aligned to the *North Carolina Standard Course of Study for Grades 9-12*, and will be subject to review.

Students must complete at least one unit of mathematics credit in their senior year. This policy will go into effect with the freshman class of 2008.

- (1) Effective with the class entering ninth grade for the first time in the 2000-2001 school year, students shall select one of the following four courses of study:

NOTE: All students are encouraged, but not required, to include at least one elective course in arts education. Unless included as career/technical education credits in the career preparation course of study, courses in R.O.T.C. qualify for credit as electives in any of the courses of study.

(A) career preparation, which shall include:

- i. four credits in English language arts, which shall be English I, II, III, and IV;
- ii. three credits in mathematics, one of which shall be algebra I (except as limited by G.S. 115C-81(b));
- iii. three credits in science, which shall include biology, a physical science, and earth/environmental science;
- iv. three credits in social studies, which shall be Civics and Economics; U.S. history; and world history;
- v. one credit in health and physical education;
- vi. four credits in career/technical education, which shall be in a career concentration or pathway that leads to a specific career field and which shall include a second-level (advanced) course; or four credits in one of the four disciplines in arts education: theatre, music, visual arts, or dance; or four credits in R.O.T.C.;
- vii. two elective credits; and
- viii. other credits designated by the LEA.

(B) college technical preparation, which shall include:

- i. four credits in English language arts, which shall be English I, II, III, and IV;
- ii. three credits in mathematics, which shall be either algebra I, geometry, and algebra II; or algebra I, technical mathematics I, and technical mathematics II; or integrated mathematics I, II, and III;
- iii. three credits in science, which shall include biology, a physical science, and earth/environmental science;
- iv. three credits in social studies, which shall be Civics and Economics; U.S. history; and world history;
- v. one credit in health and physical education;
- vi. four credits in career/technical education, which shall be in a career concentration or pathway that leads to a specific career field and which shall include a second-level (advanced) course;
- vii. two elective credits; and
- viii. other credits designated by the LEA.

NOTE: A student who is pursuing this course of study may also meet the requirements of a college/university course of study by completing one additional mathematics course for which Algebra II is a prerequisite and, effective with the

class entering the ninth grade for the first time in the 2002-03 school year, two credits in the same second language.

- (C) college/university preparation, which shall include:
 - i. four credits in English language arts, which shall be English I, II, III, and IV;
 - ii. three credits in mathematics, which shall be algebra I, algebra II, and geometry or a higher level course for which algebra II is a prerequisite; or integrated mathematics I, II, and III; however, effective with the class entering the ninth grade for the first time in the 2002-03 school year, this requirement shall become four credits in mathematics, which shall be algebra I, algebra II, geometry, and a higher level course for which algebra II is a prerequisite; or integrated mathematics I, II, III, and one course beyond integrated mathematics III;
 - iii. three credits in science, which shall include biology, a physical science, and earth/environmental science;
 - iv. three credits in social studies, which shall be Civics and Economics; U.S. history; and world history;
 - v. one credit in health and physical education;
 - vi. two credits in the same second language or demonstration of proficiency in a language other than English as determined by the LEA;
 - vii. four elective credits, except that effective with the class entering the ninth grade for the first time in the 2002-03 school year, this shall be reduced to three elective credits; and
 - viii. other credits designated by the LEA.
 - (D) occupational, which shall include:
 - i. four credits in English language arts, which shall be Occupational English I, II, III, and IV;
 - ii. three credits in mathematics, which shall be Occupational Mathematics I, II, and III;
 - iii. two credits in science, which shall be Life Skills Science I and II;
 - iv. two credits in social studies, which shall be Government/U.S. History and Self-Advocacy/Problem Solving;
 - v. one credit in health and physical education;
 - vi. six credits in occupational preparation education, which shall be Occupational Preparation I, II, III, IV, 300 hours of school-based training, 240 hours of community-based training, and 360 hours of paid employment;
 - vii. four vocational education elective credits;
 - viii. computer proficiency as specified in the student's IEP;
 - ix. a career portfolio; and
 - x. completion of the student's IEP objectives.
- (2) Effective with the class entering ninth grade for the first time in the 2006-2007 school year, students who are following the career preparation, college technical preparation, or college/university preparation courses of study shall meet the following exit standards:

- (A) successfully complete a senior project that is developed, monitored, and scored within the LEA using state-adopted rubrics; and
 - (B) score at proficiency level III or above on the end-of-course assessment for English I, U.S. History, Biology, Civics and Economics, and Algebra I. A student who does not score at proficiency level III or above on the end-of-course assessment for any of these courses but who passes the course shall be offered the opportunity to retake the assessment no later than three weeks from the receipt of assessment results. If the student does not score at or above proficiency level III on the retest, school officials shall apply the review process described in Rule .0504 of this Section to provide focused intervention, a second retest opportunity, and a review of the student's documentation to determine whether the student has met the exit standard for the course. The principal shall make the final decision as to whether the student has met the exit standard.
- (3) LEAs may count successful completion of course work in the ninth grade at a school system which does not award course units in the ninth grade toward the requirements of this Rule.
 - (4) LEAs may count successful completion of course work in grades 9-12 at a summer school session toward the requirements of this Rule.
 - (5) LEAs may count successful completion of course work in grades 9-12 at an off-campus institution toward the locally-designated electives requirements of this Rule. 23 NCAC 2C .0305 shall govern enrollment in community college institutions.
- (f) Effective with the class of 2001, all students must demonstrate computer proficiency as a prerequisite for high school graduation. The passing scores for this proficiency shall be 47 on the multiple choice test and 49 on the performance test. This assessment shall begin at the eighth grade. A student with disabilities shall demonstrate proficiency by the use of a portfolio if this method is required by the student's IEP.
 - (g) Special needs students as defined by G.S. 115C-109, excluding gifted and pregnant, who do not meet the requirements for a high school diploma shall receive a graduation certificate and shall be allowed to participate in graduation exercises if they meet the following criteria:
 - (1) successful completion of 20 course units by general subject area (4 English, 3 math, 3 science, 3 social studies, 1 health and physical education, and 6 local electives) under paragraph (e) of this Rule. These students are not required to pass the specifically designated courses such as Algebra I, Biology or United States history; and
 - (2) completion of all IEP requirements.

History Note: Authority G.S. 115C-12(9b); 115C-81(b)(4); N.C. Constitution, Article IX, Sec. 5; Eff. December 1, 1999; Amended Eff. January 2, 2006; April 1, 2005; September 1, 2002; December 1, 2001; December 1, 2000.