Guidelines for College Mathematics Course Content for General Education Core Curriculum

A comprehensive mathematics course such as college algebra, college mathematics, college statistics, quantitative literacy/reasoning or higher-level college mathematics course may be applied toward an associate or baccalaureate degree from a state-support college or university in Arkansas. Any mathematics course used to meet the 35-credit hour state minimum general education core requirement for the associate or bachelor's degree must be approved for inclusion in the Arkansas Course Transfer System (ACTS). Some college mathematics courses may not be accepted toward degree majors in science, technology, engineering and mathematics (STEM) or STEM-related degrees.

Beginning Fall 2013, an appropriate non-remedial, college-level applied technical mathematics course may be accepted toward an associate degree in a career and technical education (CTE) area. The initial course placement for mathematics courses must be determined using the state-approved minimum score or higher institutional score on the ACT or comparable exams as outlined in AHECB Policy 5.8.

Arkansas Course Transfer System (ACTS) Mathematics Course Content Guide Summary of Minimum Course Content Requirements

MATH 1103 College Algebra (3 semester credit hours)
College Algebra must be based on a function approach with a strong emphasis on critical thinking, mathematical modeling, and technology. The course must include general concepts of functions and include a study of quadratics; polynomial, rational, logarithmic, and exponential functions; systems of equations; sequences and series; and matrices and determinants.

MATH 1113 Quantitative Literacy/Mathematical Reasoning (3 semester credit hours)
Course designed for general education core and for degrees not requiring college algebra. A strong emphasis should be placed on critical thinking, mathematical modeling, and technology. The majority of the course must include topics from general concepts of functions. Projects, group work, reading, and writing should be included.

1. The ACTS course number and course title must be included on all published materials related to any mathematics course listed in the Arkansas Course Transfer System.

2. An institutional administration and board may elect to set higher minimum course placement scores for college algebra and other college mathematics courses than the statewide minimum scores listed in AHECB Policy 5.8.

Guidelines for Development of Mathematics Courses for Associate of Applied Science Degrees and Career and Technical Education (CTE) Associate Degrees

Course Development – MATH1013 Applied Technical Mathematics

To meet the state general education core requirement for the mathematics course applied toward Associate of Applied Science (AAS) degrees and career and technical education (CTE) associate degrees, the Applied Technical Mathematics course must:

1. Be a college-level, non-remedial mathematics course appropriate for career and technical education associate degree programs that is developed and approved by mathematics faculty and/or program-related CTE faculty through the established institutional course approval process; and

2. Require AAS and CTE associate degree-seeking students to have a minimum mathematics sub-score of 16 on the ACT, 21 on the COMPASS Algebra test, or a comparable exam score for placement into the Applied Technical Mathematics course.
   (The non-remedial, college-level applied technical mathematics course will not meet the mathematics course requirement for the 35-semester credit hour state minimum general education core and cannot be applied toward transfer associate degrees and bachelor's degrees.)

3. Design a 3-credit hour college-level, non-remedial Applied Technical Mathematics course that includes mathematical concepts in the context of technical areas that build on the skills through application; or

   Design a college-level, non-remedial Applied Technical Mathematics course with a sequence of modules that includes:

   a. A core set of mathematics modules appropriate for all career and technical education programs offered by the institution; or

   b. core set of mathematics modules for career and technical education programs and any additional mathematics modules identified by the institution to be appropriate for particular career and technical certificate and associate degree programs. Students can be assigned different additional mathematics modules depending on the program of study, and any of these additional modules can be assigned as part of the sequence of modules within an Applied Technical Mathematics course.

      1) Students that do not meet the minimum course placement score for enrollment in the Applied Technical Mathematics course can be enrolled in mathematics competency modules that prepare them for the Applied Technical Mathematics course modules.

2) The institution may determine that the students should be able to move into the Applied Technical Mathematics modules in the same semester that the math competency modules are completed and may choose to include these math competency modules in the Applied Technical Mathematics course sequence of modules to make up an extended sequence of modules within a single course. (The institution will determine the minimum mathematics sub-score for placement in the combined remedial/developmental mathematics modules and the Applied Technical Mathematics course modules.)

3) Institutions can designate a separate course for the remedial/developmental mathematics competency modules and only assign the remedial/developmental mathematics competency modules to those students with a mathematics sub-score below 16 on the ACT or comparable exam score.

4) Institutions also may choose to start all students needing an Applied Technical Mathematics course for their program of study in the remedial/developmental mathematics competency modules (regardless of ACT or comparable exam score). Prepared students will quickly demonstrate mastery of the remedial/developmental mathematics competency modules through pre-tests before moving on to the college-level, non-remedial Applied Technical Mathematics modules. The intent is for students to be able to complete the sequence of assigned mathematics modules in a single semester. Students will enroll in an appropriate course the second semester only if needed to complete the remaining assigned modules in the sequence.

ADHE Course Review and Approval
Each institution will determine the content of the Applied Technical Mathematics course for Associate of Applied Science degrees and career and technical education degrees. **The course description and syllabus for a new or existing college-level, non-remedial Applied Technical Mathematics course must be submitted by the institutional chief academic officer to ADHE no later than May 1, 2013, for implementation in Fall 2013; or by May 1 of any year prior to Fall implementation.**

1. The course syllabus must include the course number, course title, textbook title, textbook table of contents with chapter topics.

2. The institution must indicate the minimum math sub-score for course placement.

3. The institution must provide a description of the course development and course approval process, including the names of the mathematics and/or program area faculty primarily responsible for the course development and their comments.

4. The institution must provide documentation of the course approval by the Curriculum Review Committee.

5. The institution must provide documentation that the content for the college-level, non- remedial Applied Technical Mathematics course is appropriate for a 3-semester credit hour general education core course for the Associate of Applied Science degree or for career and technical education associate degree programs.

6. Documentation of the appropriateness of the Applied Technical Mathematics course content must be based on one of the following:

    a. Employer Feedback - a summary of comments from local area employers on the mathematical knowledge and skills of recent AAS and CTE program graduates based on the job placements and requirements (provide names of employers and program areas);

    b. Program Advisory Group – a summary of comments from program advisory groups on mathematical knowledge and skills required for AAS and CTE programs offered by the institution (provide names of program advisory members, their companies and their positions)

    c. Program Licensure/Certification Requirements (provide the web links for stated licensure/certification requirements for the CTE program areas);

    d. Program Accreditation Criteria/Professional Association Standards (provide the web links for relevant criteria/standards); or

    e. Mathematical association research, guidelines or recommendations on applied technical mathematics (provide the relevant weblinks).

7. The institution must provide the associate degree titles (and AHECB degree codes), and the related general education core curriculum outlines that will require the college-level, non-remedial Applied Technical Mathematics course.

8. The institution must confirm that the proposed Applied Technical Mathematics course will be 1) taught by a mathematics faculty member with the master's degree in mathematics or the master's degree in a related field with 18 graduate semester credit hours in mathematics or 2) taught jointly by a mathematics faculty member with the appropriate academic credentials and a program area faculty member.

Course Implementation – Fall 2013

Institutions will be contacted if additional information is needed to complete the ADHE review of the applied technical mathematics course. ADHE will notify the institutions of ADHE approval of the applied technical mathematics course no later than June 15, 2013.

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