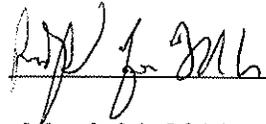


ASSOCIATE SUPERINTENDENT APPROVAL



STATE BOARD MEETING DATE March 24, 2014

SUBJECT: Process for analyzing Career and Technical Education programs for embedded Arizona Career and College Ready Standards for Mathematics for the purpose allowing the issuance of mathematics credits, pursuant to R7-2-302.02(4)(a)

SUBMITTED BY: Dan Brown, DAS Career and Technical Education

MANAGEMENT TEAM REVIEW:

BACKGROUND INFORMATION:

Twenty Career and Technical Education programs have been analyzed for embedded mathematics content and crosswalks to the Arizona College and Career Ready Standards for Mathematics have been developed. Twelve Career and Technical Education programs that have math content remain to be analyzed to determine if they contain sufficient high school math that align with College Career Ready Standards in Mathematics and a cross-walk developed. The remaining CTE programs either have no high school level math related standards or have standards under development.

In an effort to expedite the process of analyzing the CTE programs for high school math, the CTE and K-12 Academic Standards units have collaboratively revised the analysis and review process.

It is anticipated that this process will be utilized with similar cost incurred in completing the remaining CTE/Math Crosswalks as well as, when determining embedded Arizona College and Career Ready Standards in other content areas.

Revised Analysis and Crosswalk Process:

It is proposed that this work be accomplished in 2-day Math Analysis Institutes, the first to be held March 26 and 27, 2014. The Institutes will be conducted by CTE staff with support from K-12 Academic Standards staff and will involve teams consisting of 2 Mathematics teachers identified by the K-12 Academic Standards staff and 2 CTE teachers identified by the CTE staff for each program to be analyzed. The analysis process will require two days of work within the institute setting for team orientation, training in the process, and initiating the work of analyzing CTE Technical Skill Standards for embedded high school level AZ College and Career Ready Standards for Mathematics. The analysis process will require an additional 2 days of work for the teacher teams outside the institute setting to finalize the analysis process and development of the crosswalk. The CTE programs that are determined to have sufficient high school math that aligns with AZ College and Career Ready Standards for Mathematics to be eligible for 4th credit math, will be presented to the Arizona State Board of Career and Technical Education for approval. See the attached **Process for Identifying AZCCRS in Mathematics Embedded in CTE Program Standards** document.

BOARD ACTION REQUESTED: INFORMATION ACTION/DESCRIBED
BELOW:

ATTACHMENTS: YES NO

**CTE Program Standards/College Career Ready Standards for Mathematics
CTE/K-12 Collaborative Plan for Revising/Developing Math/CTE Crosswalks
Institute Schedule and Projected Costs**

One team per program. Teams consist of :

2 math teachers (identified by K-12 Math Standards staff)

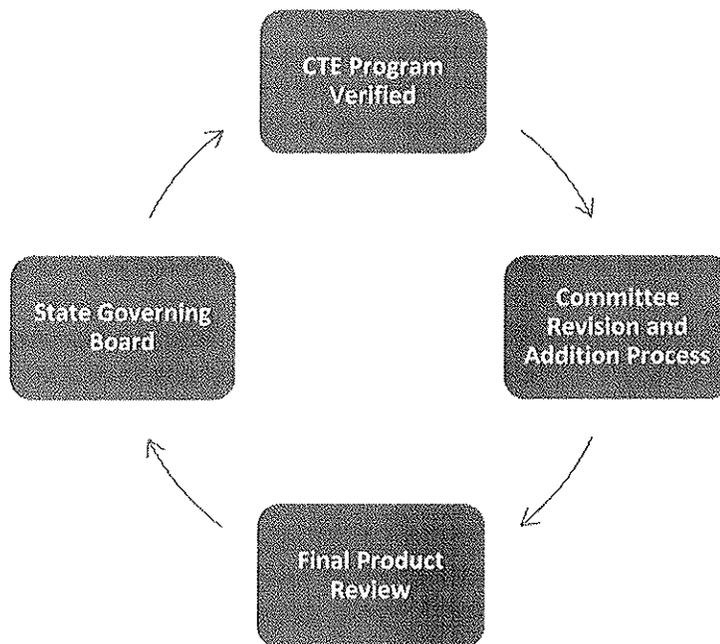
2 CTE program teachers (Identified by CTE staff)

Institute I – March 26-27, 2014

Architectural Drafting, Mechanical Drafting

Number of teams	Anticipated work days per team	Compensation for teachers	Estimated lodging/mileage/food costs for out of town teacher	Facility cost	Total
2 teams (consisting of 4 teachers each= 8 participants)	4- 8 hour work days (2 days on contract, 2 days off contract)	\$500.per team member (\$250. Per day for 2 days off contract work) Total: \$4,000	Estimated 5 out of town participants,(1 night lodging, food @ \$150. each) Total: \$750.	\$33.50 per participant per day (inclusive of meeting space, continental breakfast and lunch) 8 participants Teams + 4 facilitators @ \$67.00 Total: \$804.	\$5,554.
Timeline					
Final product due to CTE and K-12 Standards	April 7, 2014				
Formatting of final product by CTE- completion due	April 18, 2014				
Final product available online to school districts	June 2014 Pending approval by State Board of Education				
*Notes:					

*Four CTE programs began the Process for Revision current CTE Crosswalks to AZCCRS Mathematics: Architectural Drafting, Mechanical Drafting, Welding, Precision Machining. Both Welding and Precision Machining were determined not to have sufficient mathematics that align to AZCCRS in mathematics embedded in the current CTE program standards. These two programs will be scheduled to have the existing CTE standards revised, following that process a new mathematics crosswalk will be developed. **Architectural Drafting and Mechanical Drafting** will continue through the process and are scheduled to move to the Validation Committee Institutes March 26-27th.



Draft Revisions
3/11/14

Process for Revision current CTE Crosswalks to AZCCRS Mathematics

CTE Program Initial Verification

Step 1:

CTE internal staff will review the targeted CTE programs and answer the following questions. Documentation will be provided on a spreadsheet.

1. Does the CTE Program have current CTE standards? Yes/No
2. Does the CTE Program have a current crosswalk document with the AZCCRS in high School Mathematics including the Traditional and Mathematical Practices columns? Yes/No
3. Does the current crosswalk appear to have a substantial amount of math standards documented? Yes/No

Step 2:

If yes to the above questions, the targeted CTE programs will move to K-12 Standards for the following determination:

4. Does the K-12 Mathematics Standards team believe there are a substantial amount of mathematics standards documented within the current crosswalk to justify validation by the specific CTE Program Specialist? Yes/No

If yes to above questions, the targeted CTE programs will move forward for Crosswalk Validation by the Crosswalk Validation Committee.

Crosswalk Validation Committee

The Crosswalk Validation Committee will consist of a review, revision, and addition process. Validation Teams will consist of two CTE Practitioners and two High School Mathematics Practitioners for each CTE program under review.

Committee Format:

- 2-day Institutes will be scheduled for initiating the committee validation work
 - Team members will receive initial training at institute – CTE Specialists with support from K-12 Mathematics Standards will provide orientation and training in the crosswalk process
 - Team will begin the work of reviewing, validating, revising and making additions to the initial crosswalks
- An online environment will be created by CTE for validation teams to continue work for two additional days beyond the institute
 - CTE and K-12 Specialist will monitor and review work progress in the online environment
 - Final product will be completed and submitted through the online environment

The Crosswalk Validation Committee will review the current crosswalk for rigor, appropriate level of application, and exemplary examples and explanations. The Committee will answer the following questions:

1. Are the student actions consistent between the AZCCRS and CTE Standards?
2. Is each CTE Standard/Measurement Criteria listed in the current crosswalk aligned to the AZCCRS? *CTE technical standards that could have a natural connection to the rigor of the AZCCRS in Mathematics will be highlighted in yellow if not already included in the current CTE program crosswalk.*
 - i.e. If multiple CTE Standards/Measurement Criteria are listed, does each standard/measurement criterion align to the AZCCRS? If a CTE Standard/measurement criterion is not listed in the crosswalk, but the program standards could support mathematics, this standard will be highlighted in the technical standards document for that program.
3. Are the applications of the AZCCRS to the CTE Standards explicit? *If no, highlight in yellow for team review.*
4. Are the applications of the AZCCRS to the CTE Standards rigorous? Yes/No
5. Do the applications of the AZCCRS to the CTE Standards contain significant (high school level) mathematics?

If Explanations and Examples are present in the crosswalk, please answer the following questions.

6. *Are the Explanations and Examples explicit? Yes/No. If no, highlight in yellow for team review.*
7. *Are the Explanations and Examples rigorous? Yes/No. If no, highlight in yellow for team review.*
8. *Do the Explanations and Examples contain significant (high school level) mathematics level application of CTE program to mathematics? Yes/No. If no, please delete and leave blank.*

If yes to all of the above questions, the targeted CTE programs will continue the Validation process.

If answers are no, the CTE Program will be added to the CTE Program list for new crosswalk development or Standards Validation review.

1. CTE Crosswalk Process:
 - a. Crosswalk – review/revision/addition of alignment of 1st five columns
 - i. AZCCRS in Mathematics
 - ii. Traditional – signifies inclusion in Algebra 1, Geometry, Algebra 2, Modeling
 - iii. CTE Standard/Measurement Criterion
 - iv. Application of Mathematics Standard
 - b. Explanations and Examples – review/revision/addition of signification application examples
2. Institute with whole group – initial 2 days
3. Additional two days of group work through an online environment – Team of 4
 - a. CTE Program Specialist and K-12 Specialist included in the work group
 - i. Review within online environment during completion cycle
 - ii. Provide feedback and guidance during completion cycle

Committee Outcomes:

- If Program Specialist(s) approve of group final product, move to next stage, Product review.
- If Program Specialist(s) do not approved group final product, next steps provided by Program Specialist may include any of the following:
 - extended revision by initial team,
 - new team established to continue revision,
 - stop the process for the current program (if it is determined that the program standards are not going to align as evidenced by work group)

Final Product Review

CTE and K-12 Standards

1. Final Product development
 - a. Formatting/Editing will be the responsibility of CTE
 - b. Inclusion of necessary art work/graphics
 - i. Validation Teams/K-12 Standards will provide the perimeters of necessary graphics such as graphs, tables, charts, diagrams
 - ii. CTE will develop the electronic versions of the graphics for inclusion in the final product
 - c. Web ready formatting and posting of the final product will be the responsibility of CTE
2. Approval given by CTE Program and K-12 Standards
 - a. Only CTE programs determined to have significant high school level mathematics through the crosswalk process and agreed upon by K-12 Academic Standards in Mathematics Specialist will move forward to the State Board of Education for approval.

State Board of Education

1. CTE will prepare the agenda item for each Crosswalk presented.
 - a. K-12 Standards review agenda item before submitted to SBE
 - b. Upon approval by the State Board of Education, CTE will be responsible for linking final crosswalk product to ADE website
 - c. Communication of new resources available to the field will be the responsibility of CTE