



CAREER AND TECHNICAL EDUCATION STANDARDS REVISION REPORT

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Introduction

Career and Technical Education (CTE) in South Dakota includes organized educational programs that provide a sequence of courses directly related to preparing individuals for employment in current or emerging occupations. These programs offer standards-based learning that contributes to an individual's academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, and occupational-specific skills.

This year, the courses, sequences, standards, and sub-indicators for six CTE areas were reviewed and revised. The current CTE state standards utilized in South Dakota CTE were the starting point for the process of standards review and update.

Participants

Project participants included South Dakota Department of Education Division of Career and Technical Education Program Staff, South Dakota CTE Cluster Revision Teams, Subject Experts and Other Educators, and the public, who reviewed and provided feedback along with Project Facilitators from Thomas P. Miller & Associates, Fleck Education, and Advancing Connections Inc.

Process

South Dakota's Career and Technical Education standards are undergoing a review, revision, and adoption process.

Rigorous standards, consistent and effective program quality across the state, alignment to postsecondary and industry needs, and robust participation from the business community were top priority in the process for developing and reviewing standards.

The following CTE areas were part of the review process for this year.

- Foundational CTE Courses
- Architecture and Construction Cluster
- Education and Training Cluster
- Information Technology Cluster
- Law and Public Safety Cluster
- STEM Cluster

The Project Facilitators worked with South Dakota Department of Education Division of Career and Technical Education Program Staff to establish Cluster Revision Teams for each of the CTE areas being reviewed this year. These teams played an integral role in the process for standards review by providing oversight and feedback throughout each phase.

The Revision Teams considered the priority needs addressed in the charge from the South Dakota Department of Education Division of Career and Technical Education and utilized those principles as guiding factors when reviewing standards and developing recommendations. Additionally, the following criteria for standards were considered:

- Research-based
- Rigorous
- Connected to industry
- Promote readiness for college, career, and life
- Support students’ capacity for disciplinary thinking
- Show clear progression of career and technical expectations from foundation through capstone courses

Multiple steps and stakeholder groups were involved in the process for revising standards in career and technical education to encourage student success.

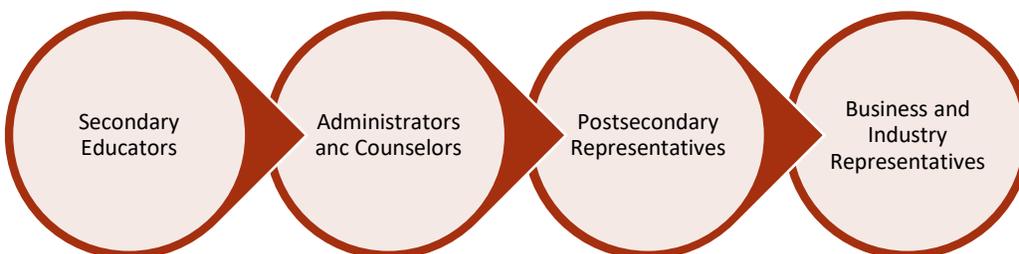
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| STEP 1 | Specialists Review |
| STEP 2 | Revision Teams Assembled |
| STEP 3 | Stakeholders Surveyed |
| STEP 4 | Revisions Utilized Data to Update Standards |
| STEP 5 | Final Stakeholder Review |
| STEP 6 | Standards Finalized and Approved |

Step One

Review of the standards by both South Dakota DOE/CTE program staff and project facilitators for analysis of state needs and alignment with national standards was an initial part of the process. South Dakota CTE Specialists met with consultants to review current program descriptions, sequencing, and standards, along with current and emerging needs.

Step Two

The second step was to engage stakeholders to serve on revision teams. Team members were solicited through a virtual application, which was communicated through distribution lists and outreach from DOE/CTE staff. Revision Team members were sought to include the following representation.



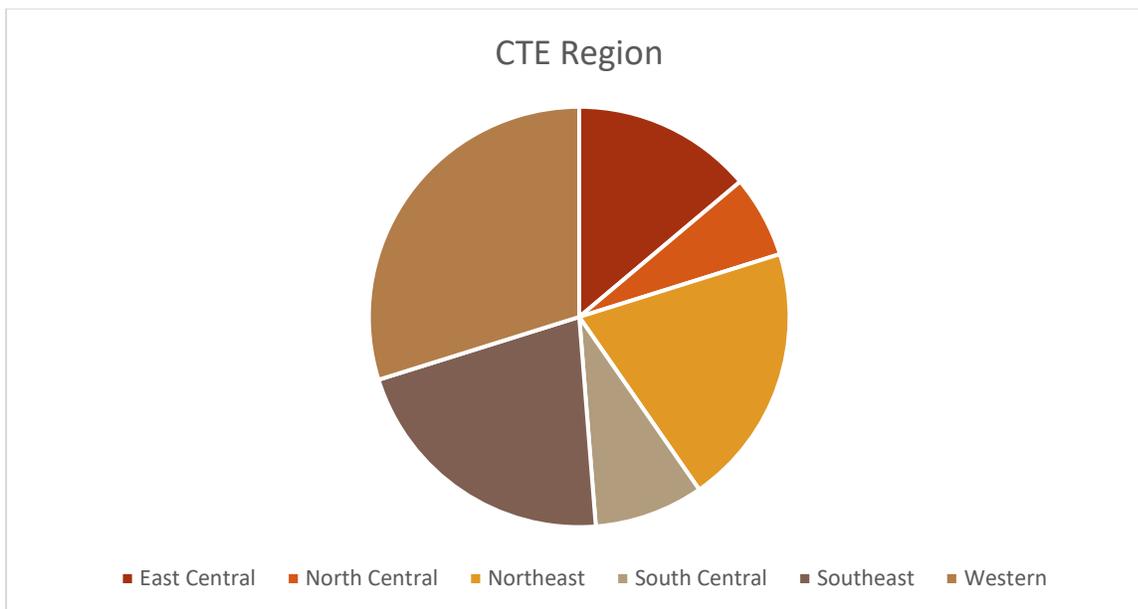
Step Three

Online surveys were developed and widely distributed to stakeholders to review current standards and participate in the process. Stakeholder types included:

- Teacher
- Postsecondary educator
- Administrator
- Counselor
- Business and industry representative
- Organization representative
- Community member

Online surveys were made available to the public through the South Dakota Department of Education Division of Career and Technical Education's distribution lists. Revision Team members were invited and encouraged to help distribute the surveys through their own networks. The surveys were available online during the month of April. More than 178 reviewers provided their feedback.

Reviewers were asked to identify both their stakeholder types and the region they were from in order to document a broad-based review. Engagement of stakeholders from all six of South Dakota's CTE regions was evident on the survey results.



Stakeholders participated in vetting the CTE standards in the six CTE areas for which state standards were being revised. Reviewers were invited to provide feedback on each individual standard indicator, sub-indicator, and statements of knowledge, understanding, and skill. They could suggest keeping the standard as it was written, or suggest a revision, or suggest that the standard be eliminated. Reviewers could then suggest specific revisions and provide comments about why a standard should be revised or removed. This provided both quantitative data about stakeholder ratings and standard-specific qualitative feedback to be considered. Survey results were utilized in editing and creating the 2020 CTE Standards presented in this report.

Step Four

Revision Teams were established and brought together virtually. They met over three days to review courses, course sequences, course descriptions, standard indicators, and sub-indicators. The Revision Teams utilized data from the surveys that were summarized by the consultants. Each revision team received all survey results, including raw data and summarized recommendations for changes, standards that needed to be addressed because of the survey recommendations, and all comments from survey participants.

Revision teams utilized this data and their professional experiences to work collaboratively through a virtual system to address all feedback from survey participants and to address changes in the industry. The revision teams finalized recommended changes in preparation for public review and adoption of standards.

Step Five

Step five of this phase of the project was providing opportunity for stakeholders to have a final review of revised cluster courses, sequences, descriptions, standards, indicators, and sub-indicators. This review was survey based and open to the public.

Standards were then finalized and assembled into a report to share at State Board of Education Standards Meetings and Public Hearings during the 2020-2021 school year.

Step Six

The final step in this phase of the process is adoption of the standards after public review and comment is conducted at the State Board of Education Standards Meetings. When standards are approved, the unpacking process will be conducted in the summer of 2021.

Career and Technical Education

Standards Revisions Summary, Summer 2020

Career and Technical Education (CTE) in South Dakota includes organized educational programs offering a sequence of courses directly related to preparing individuals for employment in current or emerging occupations. These programs include standards-based learning that contributes to an individual's academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, and occupational-specific skills. This year, six CTE area courses, sequences, standards, and sub-indicators are being reviewed and revised.

- Foundational CTE Courses
- Architecture and Construction Cluster
- Education and Training Cluster
- Information Technology Cluster
- Law and Public Safety Cluster
- STEM Cluster

The important work of the Career and Technical Education standards revision included surveying educator stakeholders via a voluntary on-line survey in the spring of 2020. Revision Teams comprised of educator experts in each of the six areas under review were convened in June 2020. The revision teams reviewed current standards and recommendations gleaned from survey results and collaborated to make recommendations that would assure courses, course sequences, and standards that are rigorous, coherent, and focused to best serve the learning needs of all students in South Dakota.

Foundational CTE Courses

Foundational CTE courses apply across all sixteen career clusters and aim to give students foundational knowledge and skills that apply to any career field they may explore or pursue in the future. In a scope and sequence of CTE courses, Foundational CTE courses are the first courses students would take. They would then progress into career cluster courses and pathway-specific courses.

Revision Team Members

| | |
|---------------------|---|
| Andrea Diehm | South Dakota DOE/CTE |
| Megan Tatum | South Dakota DOE/CTE |
| Nioka Clark | Thomas P Miller & Associates |
| Sheila Anderson | Britton-Hecla High School |
| Tim Boender | Pierre Public Schools - Georgia Morse Middle School |
| Jodi Stoddard | Crazy Horse School |
| Aaron Morlock | South Dakota Department of Labor and Regulation |
| Danielle Schonebaum | Waverly/South Shore |
| Todd Dvoracek | Yankton School District |
| Alyssa Krogstrand | T.F Riggs High School |
| Linda White | Aberdeen School District/ Project SEARCH |
| Stephanie Waller | CTE Academy-Sioux Falls |
| Tiffany Newman | Custer High School |
| Keley Smith-Keller | Mount Marty College |
| Terra Kerska | SD DLR |
| Kelli Endorf | Hanson School District |
| MELISSA GOOD | Stevens High School |
| Suzy Ries | Baltic High School |
| Tere Froelich | Sturgis Brown High School |
| Yolanda Price | Hanson School District |
| Christine Bosma | Mt. Vernon School District |
| Joe Dalton | Waverly-SS |

Notable Changes

The Foundational CTE Courses Revision Team members divided into three smaller groups over the course of the three-day review process from June 2-4, 2020. Listed below is a summary of the major course revisions proposed by the Foundational CTE Courses Revision Team.

Adjusting Teacher Certification for all Foundational Courses

The Revision Team is recommending allowing all certified CTE teachers to teach any course in the Foundational cluster. Since every course in this cluster is designed to be an introductory course to all sixteen career clusters, any certified CTE teacher would be qualified to teach a foundational course.

Foundations of Technology Course Title Change

The Revision Team is recommending changing the course title of *Foundations of Technology* to *Workplace Technology Skills* to help clarify that this is a foundational course for all career clusters and is not tied to the technology cluster. The Revision Team believes the standards for this course need to focus on general workplace technology skills (e.g., word processing) that a student will need no matter the career cluster they choose and that is now reflected in the course title change.

Elimination of Entrepreneurship in the Foundational Cluster

The Revision Team is recommending the Foundational Entrepreneurship course be dissolved because the current standards listed for the Foundational Entrepreneurship course are beyond the foundational level. The Revision Team is recommending these standards be incorporated into the Entrepreneurship courses available to students in the Business cluster as well as a Capstone course when those standards are up for revision.

Flexibility to offer Career Exploration in Middle or High School

The Revision Team is recommending adjustments to the standards for Career Exploration to allow a school district to offer this course at either the middle school or high school level. This adjustment would allow school districts to modify this course to best meet developmental needs of their students.

Architecture and Construction Cluster

The Architecture and Construction Career Cluster engages students in the study of careers in designing, planning, managing, building, and maintaining the built environment. The pathways available in this cluster include:

- Design/Pre-Construction Pathway
- Construction Pathway
- Maintenance/Operations Pathway

Revision Team Members

| | |
|------------------------|--|
| Michelle Nelson | South Dakota DOE/CTE |
| Kati Seymour | South Dakota DOE/CTE |
| Matt Fleck | Fleck Education |
| Steve Anthony Chambers | UBC/Boxelder Job Corps |
| Bryce Holter | HANSON SCHOOL |
| Eric Schramm | Mitchell Technical College |
| James Schmit | Dakota Valley |
| Beau Larson | Webster Area |
| Jason Buckles | Bennett County School District |
| Samantha McGrath | SD DLR |
| Jim Soukup | Soukup Construction Inc |
| Kristi McCoy | Spearfish High School |
| James Hartwell | McIntosh School District |
| Margaret Pennock | Associated General Contractors of South Dakota |

Notable Changes

Listed below is a summary of the major course title changes proposed by the Architecture and Construction Career Cluster Revision Team:

- Introductory Courses
 - Introduction to Architecture and Construction – remained the same
 - Introduction to Drafting and Design – changed to Drafting and Design I
 - Introduction to Technology Education (see STEM Cluster) – remained the same
- Two-Year Courses
 - Changed “Introduction to Drafting and Design” to “Drafting and Design I”
 - Changed “Architectural Drafting to “Drafting and Design II-Architectural”
 - Changed “Cabinetry” and “Advanced Cabinetry” to “Finish Carpentry I” and “Finish Carpentry II”
 - Changed “Building Trades” to “Construction Trades I”
 - Changed “Residential Construction” to “Construction Trades II-Residential”
 - Introduced two new courses:
 - Construction Equipment I
 - Construction Equipment II

Many of the Cluster Revision Team discussions focused on changing course titles and descriptions to better reflect current terminology used in the construction industry and to be more inclusive of the broad array of construction careers available to student graduates. For example, the Cluster Revision Team felt changing the “Cabinetry” and “Advanced Cabinetry” course titles to “Finish Carpentry I and II” aligned the courses to the current industry use of finish carpenters on job sites. The change also broadened the scope of the courses to include other finish carpentry skills in addition to cabinetry.

Current “Building Trades” courses titles were changed to “Construction Trades” based on industry recommendations from the Association of General Contractors. Similarly, the Cluster Revision Team preferred “Construction Equipment” course titles over “Heavy Equipment” because the new titles accommodate for the multiple sizes and types of equipment currently used in the construction industry.

Education and Training Cluster

The Education and Training Career Cluster engages students in the study of careers in planning, managing and providing education and training services, and related learning support services. The pathways available in this cluster include:

- Administration and Administrative Support Pathway
- Professional Support Services Pathway
- Teaching/Training Pathway

Revision Team Members

| | |
|------------------------|--------------------------------------|
| Amber Rost | South Dakota DOE/CTE |
| Alyson McIntyre-Reiger | Advancing Connections Inc |
| Tracy Kern | Harrisburg High School |
| Ellen Hohbach | Plankinton Public School |
| Elizabeth Ketterling | Aberdeen Central High School |
| Ashley Seeklander | Groton Area |
| Jennifer Poulos | West Central School District |
| Nicole A Graves | South Dakota State University |
| Kayla Stuefen | Elkton |
| Elissa Herman | Edison Middle School |
| Charlotte Mohling | Wessington Springs School District |
| Wendy Conrad | Rapid City Area Schools - Central HS |
| La Kisha Jordan | TF Riggs |

Course Sequence Updates

The Revision Team recommended adding a course from the Human Services Cluster into the course sequences for Education and Training clusters. The course, *Relationships Across the Lifespan*, was reviewed and approved by the committee to be added to the course sequence because it includes critical knowledge and skills needed in all the pathways in the Education and Training cluster.

Another change in course sequencing related to the Middle School Family and Consumer Sciences Program. The current Middle School courses do not qualify for designation as cluster courses for meeting criteria for the new definition of CTE Concentrator. Clarification was made to indicate that MS FCS is an exploratory course that provides introductory knowledge and skills for pathways in several career clusters. This difference is included in the proposed updated sequencing document

Courses and Standards Updates

Middle School Family and Consumer Sciences

All the middle school Family and Consumer Sciences concepts that were previously listed separately will be combined into one course, *Middle School Family and Consumer Sciences Comprehensive*. This is a comprehensive, exploratory course and is a cluster-level course for several career clusters. This approach to the course will make it more relevant for all types of middle level programs, schedules, and rotations. This exploratory course can be tailored to meet the needs of individual schools through the option of choosing

appropriate standards from seven content areas: *Career Exploration, Nutrition, Hospitality and Tourism, Relationships, Human Development, and Textiles and Interior Design*. Standards are organized into those seven content areas for ease of use and utilize one course code (19000) for all of Middle School Family and Consumer Sciences.

Human Development Courses

The three Human Development courses were aligned so that all three courses include key overarching concepts, including principles of human development, developmental ages and stages of identified groups, and careers. Additional key topics include support systems, developmental theorists, quality of life concepts, family life systems, social and emotional needs, influences on growth and development, and environmental factors to name a few. Special consideration was given to updates in the human development courses to ensure that the updates were not only applicable to the Education and Training cluster but were also applicable to the Human Services cluster where these courses are used in the existing course sequencing.

- *Human Development: Prenatal to Toddler*. Developmental milestones for prenatal to toddler were broken down to focus on three key age groups: Conception through Birth, Infants, and Toddlers
- *Human Development: Preschool to School Age*. Key concepts included for all Human Development courses were included in the update of this course.
- *Human Development: Adolescence through Adulthood*. A major change to this course was to edit the previous course title:

Human Development: Adolescence to Death —————> Human Development: Adolescence through Adulthood

The new course title was chosen to make the class more marketable to students and more accurately descriptive of topics covered. Additionally, the same key topics were included for development and services of this age group.

Introduction to Education and Training

Minor updates and changes were made to this course. Standards for education careers in as well as training-related careers were included in the update. Key updates include a focus on helping students understand effective and efficient learning environments, equity and diversity in education, and the history of education and training.

South Dakota Educators for Tomorrow

The key update to this course was a title change:

Teaching and Training as a Profession —————> South Dakota Educators for Tomorrow

The title change will help clarify sequencing of courses in the education and training cluster. Also, there is a high priority on recruitment into the field of education and the new title highlight the “grown your own” approach to recruiting teachers for the state of South Dakota.

An increased focus on all careers in education and training was a priority for the Revision Team. In addition to updates addressing the breadth of careers, additional updates to the revised standards include:

- An increased focus on the learner's perspective
- Individualized learning
- Curriculum models and strategies
- Collaboration
- Lesson plans and training plans
- Assessment

Information Technology Cluster

The Information Technology Career Cluster engages students in the study of content knowledge and skills for entry level, technical, and professional careers related to the design, development, support and management of hardware, software, multimedia, and systems Integration Services. The pathways available in this cluster include:

- Networking Systems
- Programming and Software Development
- Web and Digital Communications
- Information Support Services

Revision Team Members

| | |
|-----------------|------------------------------|
| Kara Schweitzer | South Dakota DOE/CTE |
| Kristen Barry | Thomas P Miller & Associates |
| Kristy Ring | Gregory Schools 26-4 |
| Jay Maynard | Marty Indian School |
| Lisa Wiese | Howard |

Notable Changes

Based on survey feedback, the Information Technology Cluster Revision Team increased the number of courses in the cluster from five to ten. A summary of course-level changes is listed below:

- Cluster Courses
 - Introduction to Information Technology – remained the same
 - Computer Hardware and Software – remained the same
 - Introduced one new course:
 - ◆ Computer Science Essentials
- Pathway Courses
 - Web Development I & II was split into two courses:
 - ◆ Web Development
 - ◆ Advanced Web Development
 - Computer Programming I & II was split into two courses:
 - ◆ Computer Programming
 - ◆ Advanced Computer Programming
 - Network Technologies – remained the same
 - Introduced two new courses:
 - ◆ Cybersecurity
 - ◆ Computer Science Principles

These changes came from two main categories of feedback in the survey – the first indicated that both Web Development I & II and Computer Programming I & II contained too much content to include in one semester, and if taught for a full year, provided less flexibility to schools and students. The revision team chose to divide each of these courses into two, with each course representing half of a credit. This allows students and schools more flexibility in scheduling these courses. It also presented an opportunity to provide clear guidance on how to “level up” skills learned in the first level of the course to ensure development beyond basic recognition and comprehension.

The second category of changes related to the addition of courses that currently are only available through Project Lead the Way curriculum. The addition of standards for Computer Science Essentials, Computer Science Principles, and Cybersecurity allow for access to more schools and students. Among this group, one of the most common pieces of feedback in survey responses was the need to add an additional Cybersecurity course due to increasing demand in the field. The revision team reviewed multiple sets of standards and curriculum from existing cybersecurity courses to align these standards and ensure the appropriate level of information and skill development. In the creation of Computer Science Essentials and Computer Science Principles, the revision team reviewed resources from the Computer Science Teachers Association and other existing curriculum such as CodeHS and Exploring Computer Science to create customized standards.

Law, Public Safety, Corrections, and Security Cluster

The Law, Public Safety, Corrections, and Security Career Cluster engages students in the study of content knowledge and skills careers in planning, managing, and providing legal, public safety, protective services and homeland security, including professional and technical support services. The pathways available in this cluster are related to law and public safety.

Revision Team Members

| | |
|------------------------|---------------------------|
| Kara Schweitzer | South Dakota DOE/CTE |
| Alyson McIntyre-Reiger | Advancing Connections Inc |
| Nathan Eisenmenger | Lakota Tech High School |
| Londa Richter | Stevens High School |

Notable Changes

Law, Public Safety, Corrections, and Security is an emerging cluster in South Dakota. Currently, law and public safety courses are offered in only a few schools, but several are investigating adding this pathway. With this knowledge, the revision team approached revising the cluster to streamline the content and provide essential skills for students preparing for careers in law and public safety.

Discussion within the revision team centered on several key points regarding trends and innovations in the industry, including the increase in cyber-crime, increase use of tools and technology, and increased need for transparency. Additionally, topics related to community engagement, police ethics and cultural diversity including a focus on tribal law enforcement needs were identified as current trends in the law and public safety arena. These trends were included in the updates and revisions to the standards.

Course and Standards Updates

Law and Public Safety I

Changes were made to address feedback from the initial review about the need to include skills needed for Fire Management and Emergency Medical Services in addition to other law and public safety fields. Other additions included addressing federal policies and laws and their impact on law and public safety careers as well as the topic of domestic violence and related services.

Law and Public Safety II

Revisions to Law and Public Safety II incorporated ethical reasoning concepts identified as important amongst the revision team. Another change included adding standards about specific South Dakota Laws viewed as critical by revision team members and understanding law and support systems related to domestic violence issues.

STEM Cluster

The STEM (Science, Technology, Engineering, and Mathematics) Career Cluster engages students in the study of careers in planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services. The pathways available in this cluster include:

- Aviation
- Engineering
- Computer Science
- Robotics
- Energy

Revision Team Members

| | |
|----------------------|--|
| Jane Gubrud | South Dakota DOE/CTE |
| Peggy Wild | Advancing Connections Inc |
| Laureen Mehlert | CTE Academy - Sioux Falls School Dist. |
| Marica Shannon | Mitchell High School |
| Kyle Sander | South Middle School |
| Michelle Leonhardt | Simmons Middle School |
| Stephanie Strand | ST. Thomas More HS |
| Linell Madson | SFSD- Whittier MS |
| Becky Baker | RCAS- Central High School |
| Bob Ellefson | North Middle School |
| Greg Gramberg | Rapid City Area Schools |
| Kenneth Krzyzanowski | Southwest Middle School |
| Kyle Muhlenbeck | Sioux Falls School District |

Notable Changes

The STEM Cluster Revision Team members divided into work groups the first day to work on courses in the Aviation, Engineering and Robotics pathways. On the second day, they again divided into two work groups to work on the Computer Science and Energy pathways. Many of the work group recommendations focused on updating and clarifying terminology in the indicators and refining the examples provided for each sub-indicator. Work groups also suggested changes in course descriptions to better communicate the course content. Recommendations for changes to course sequencing language would help schools, teachers and students better understand how to schedule courses to assure student progression of knowledge and skill building.

The Revision Team then worked as a whole to review all the proposed changes and finalize their recommendations. Listed below is a summary of the major course revisions proposed by the STEM Cluster Revision Team.

Course Level Changes

- Cluster Courses
 - Change *MS Mechatronics/Robotics* to *MS Robotics*
This change better reflects the focus on robotics in this course. Mechatronics is not addressed; therefore, this word would be omitted from the title.
 - Change *MS Introduction to STEM* to *Exploring STEM in CTE*
This course has been revised to increase flexibility so that this course will be appropriate for teaching at either middle school or high school level. The revisions change the focus to exploring STEM concepts, allowing students to explore broadly and clarify their interests in pathways within the STEM Cluster. Standards have been adjusted at either the
- Aviation Pathway
There is a tremendous amount of material in the current course, more than can be adequately covered in just one course. Additionally, there is a growing need in the drone industry for more in-depth training, which would warrant a separate course.
 - Add a new course *Fundamentals of Aviation*
 - Change *Aviation* to *Aviation Careers I*
 - Add a new course *Aviation Careers II*
- Energy Pathway – no changes to course titles
- Engineering Pathway – no changes to course titles
- Robotics Pathway – no changes to course titles