South Dakota STEM
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Watertown

Participants:

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Participants introduced themselves stating name, location, and curricular area of expertise.

An introductory video, *Success in the New Economy* written and narrated by Kevin Fleming and produced by Bryan Y. Marsh, was shared. This video (available on the Internet at https://vimeo.com/67277269), describes a fallacy in the traditional "college for all" model of education and encourages individuals to select career paths based on interests and skills.

It was noted that the purpose of the work was to develop South Dakota's state standards for Science, Technology, Engineering and Mathematics (STEM) to ensure that they:

- Are aligned with industry needs
- Prepare students to be successful in employment and in postsecondary training
- Establish a sequence of courses leading to completion of a program of study.

It was clarified that standards describe "what" is to be learned, not "how" it is to be learned.

Program of study was defined as:

- A nonduplicative sequence of both academic and technical courses
- Beginning no later than grade 11 and continuing for at least two years beyond high school
- Culminating in a degree, diploma or certification recognized as valuable by business/industry partners.

A program of study was viewed as the bridge connecting preparatory and advanced work in high school with further study at the postsecondary level through a collegiate program or advanced training through work.

A summary of a recent labor market analysis for South Dakota was presented, with separate slides shown identifying the 20 largest industry clusters, the fastest growing industry clusters by percentage growth and increase in employment demand, and the occupations with a projected demand of 50 or more.

Participants were asked to identify industry trends by describing what was new in the industry, what is emerging in the industry but not yet routinely practiced, and what is no longer done in the industry. It was intended that this information would guide discussion about where new standards were needed and where existing standards could be deleted. For STEM the discussion suggested:

New

- Manufacturing – openness, transparency, adaptability
- Employers open to internal transfer to capitalize on skills of staff
- Soft skills emphasis – customer service
- Using electronic tools for communication
- Industry expecting higher skills
- Computer skills
- Understanding of more technology tools
- Software updates in medical and biological sciences
- Interdisciplinary work
- Communications
- Teamwork
- Work ethic
- Industry work culture

Emerging

- Troubleshooting and problem solving
- Pace of change
- If you build it, they will come
- Unknown skill sets
- New motivational techniques – self direction to organization needs
- Multi-tasking – prioritize and organize
- Short-cuts

No longer done

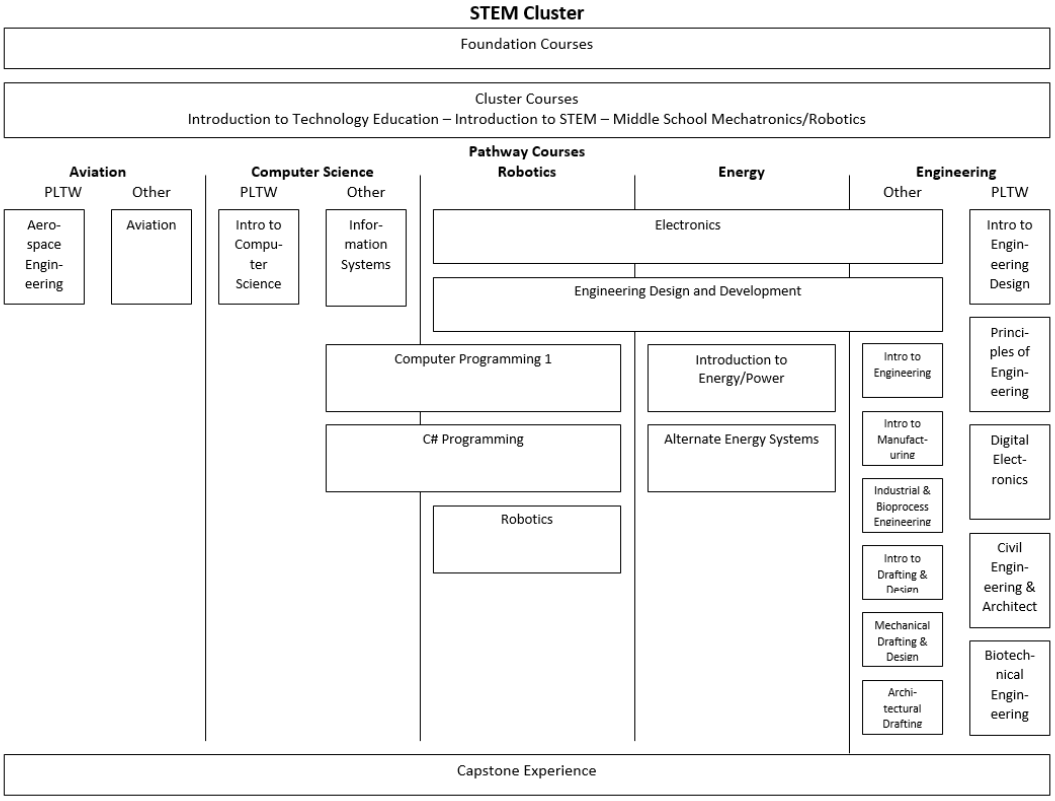
- Working in isolation
- Black and white procedures
- Inefficiency

Results of a recent survey of employers were shared. The survey was designed to ascertain if employers were having hiring difficulties, if applicants were deficient in either soft or technical

skills, and options for a state response. 140 survey responses were included in the results with largest participation from hospitality and tourism (30), architecture and construction (19), manufacturing (15), agriculture, food and natural resources (14), and transportation, distribution and logistics (10). In general:

- Four out of five employers noted having hiring difficulties in the previous 12 months.
- Primary reasons for this hiring difficulty were:
    - Low number of applicants (97)
    - Lack of work experience (67)
    - Lack of technical or occupational skills (34)
    - Inability to pass drug tests or having a criminal record (30)
    - Unwillingness to accept offered wages (29)
- Occupational areas noting the greatest hiring difficulties were hospitality (20), architecture & construction (16) and manufacturing (14) though these results are skewed by the response rate from the individual sector
- The most highly noted soft skills lacking were:
    - Initiative (85)
    - Attendance/dependability (84)
    - Communications (74)
    - Customer service (64)
    - Problem solving (55)
- Similarly, employers noted the highest needs for additional training in:
    - Attendance/timeliness/work ethic (75%)
    - Customer service (58%)
    - Problem-solving (53%)
    - Teamwork (41%)
- Two out of five employers noted that applicants lacked technical skills.
- Employers asked that the state response focus on:
    - Promotion of opportunities (11)
    - Teaching of ethics (11)
    - Teaching soft skills (6)

Participants were asked to chart out a program of study incorporating course titles for which standards would be developed. The process involved placing course titles on post-it notes on the wall with an open process to place courses where deemed appropriate and add courses deemed necessary. Following several permutations, the following structure emerged. The resulting structure, as shown in the chart below, includes foundation courses, three cluster courses, and pathway courses in five pathways. In three of the pathways separate strands were identified for courses offered through Project Lead The Way (PLTW), though no standards were developed for PLTW courses. The structure gives broad exposure to students through the three cluster courses and opportunities to specialize in each of five pathways: aviation, computer science, robotics, energy and engineering. The senior capstone experience is maintained.



As a final review of the course structure outlined in the program of study, the postsecondary partners in the group were asked to brainstorm what skills they were seeking from high school students who had completed the program of study, and high school participants were asked to brainstorm what skills they were seeking from students entering the cluster from the foundation course experience. This process ensured that the end points of standards development met the target to continue in the program of study at the next level. Participants were also asked to brainstorm community-based experiences that might strengthen the learning to give guidance to work-based opportunities in the standards development. The results of that brainstorming showed:

Postsecondary partners want:

- Basic understanding of the program content
- Personal attributes, e.g.
    - Time management
    - Ethics
    - Soft skills
    - Responsibility

High school partners want:

- Self-directed, independent thinking
- Real-world context

Community-based options considered particularly useful for students pursuing STEM studies included:

- 4-H
- Robotics club
- Destination imagination
- Odyssey of the mind
- Expos
- Citizen science
- Internships
- Tours
- Makers spaces
- Extension
- Job shadowing
- Research experience for both teachers and undergraduate students

Information was provided about what makes good standards. These criteria included:

- Essential – does it define knowledge and skills that an individual must have to participate fully and effectively in programs that prepare them to enter careers with livable salaries, and to engage in career advancement in growing, sustainable industries?
- Rigorous – does it ask a student to demonstrate deep conceptual understanding through the application of knowledge and skills to new situations?
- Clear and specific – does it convey a level of performance without being overly prescriptive? Is it written in a way that the general public would understand?
- Teachable and Learnable – does it provide guidance to the development of curricula and instructional materials? Is it reasonable in scope?
- Measurable – Can it be determined by observation or other means that the student has gained the knowledge and skills to be demonstrated to show attainment of the standard?
- Coherent – Does it fit within the progression of learning that is expected for the program of study?
- Sequential – Does it reinforce prior learning without being unnecessarily repetitive? Does it provide knowledge and skills that will be useful as the student continues through the program of study?
- Benchmarked – Can the standard be benchmarked against industry or international standards? Does it prepare the student to be successful in the regional, state and global economies?

State agency staff met in May to review the processes to be used for standards review. During that session the staff identified other criteria to be considered when writing standards:

- Connections to postsecondary programs
- Relevant across the content area
- Compatible with virtual learning

- Reflects business/industry input
- Adaptable to change over time
- Allows for instructional creativity
- Appropriate for the target audience
- Aligned with relevant academic content
- Applicable to student organizations
- Recognizes unique features of CTE

These additional criteria were shared with participants for their consideration during standards development.

Participants were encouraged to identify a "big picture" concept statement describing what was to be accomplished within the course before developing standards. This "big picture" statement would eventually be revised to be an executive summary statement at the time that the standards were drafted.

A Standards Template was shared with the participants. A template was completed for each course. The elements of the template were reviewed with the group:

- The course title was inserted at the top.
- A grid of administrative information was completed to the extent the information was known. This grid included:
    - The Career Cluster [Science, Technology, Engineering and Mathematics]
    - The Course Code [to be added by state staff]
    - Any prerequisites or recommended prior coursework
    - Credits [generally established by the individual school district]
    - Graduation requirement [generally established by the individual school district]
    - Program of study and sequence [a listing of the components of the program of study]
    - Student organization options
    - Coordinating work-based learning [refer to spectrum of work-based learning activities]
    - Industry certifications [if appropriate for the course]
    - Dual-credit or dual enrollment
    - Teacher certification requirements
    - Resources
- Course description. Eventually this will be an executive summary describing the course, but in the process participants were encouraged to develop a "big picture" statement about the course to serve as a reminder when developing standards.
- Program of study application: a more detailed description of the elements within the program of study and where the particular course fits within a sequence.
- Course Standards and prods
    - "Prods" is a list of topics to keep in mind when developing standards to see that related topics are included. The prods identified by state staff include:
        - Safety

        - Soft skills
        - Reinforcing academic concepts in math, language arts, science and social studies
        - Addressing all aspects of the industry
        - Trends [so that students are thinking of the direction that an industry is moving]
    - Indicators – the main topics written in terms of a demonstration of knowledge and skills
    - Sub-indicators – statements identifying in more detail how the indicator will be demonstrated
    - Integrated content – A space that allows for examples, explanation, reference to credentials, alignment with other academic standards or other useful information to bring clarity to the understanding about the intent of the sub-indicator
    - Notes – a place for additional information to clarify the intent and expectations of the indicator.

An example was shared to ensure understanding.

Working teams of 3 to 4 individuals were then established to write the standards. Each team selected a course to begin the work. Early drafts were reviewed by the consultants and participants were led with guiding questions so that they could refine their own work. Eventually, when standards had been developed for all courses, the participants did a final group review of all standards to give their approval. Final documents were then reviewed by the consultants for format and structure, and saved to the shared Dropbox. Participants were given two weeks to make any final comments or suggestions, at which time the Dropbox was put into a "read-only" status.

For Science, Technology, Engineering and Mathematics, the following course standards were developed or referenced:

[Cluster Courses]
Introduction to Technology Education
ITE 1 Analyze the scope and nature of technology
    ITE 1.1 Examine the relationship between technology and other areas of study
    ITE 1.2 Understand the effects of technology on the natural environment
    ITE 1.3 Examine the relationship between the cultural, social, economic, and political effects of technology on society
ITE 2 Apply the system-level thinking model (the feedback loop) to technology
    ITE 2.1 Apply the design process to engineering design process
ITE 3 Solve problems using innovation, research, experimentation and design
    ITE 3.1 Use research and experimentation methods to solve problems
    ITE 3.2 Use innovation and/or troubleshooting methods to solve problems
ITE 4 Apply appropriate skill sets to various ranges of technology
    ITE 4.1 Understand biotechnologies

ITE 4.2 Understand energy and power technologies
ITE 4.3 Understand information and communication technologies
ITE 4.4 Understand transportation technologies
ITE 4.5 Understand manufacturing technologies and materials
ITE 4.6 Understand construction technologies

ITE 5 Understand ethics and professionalism in technology
ITE 5.1 Investigate and demonstrate understanding of professionalism and ethics in the technological environment

ITE 6 Understanding safety and health in technology
ITE 6.1 Understand implications of health and public safety standards

Middle School Introduction to STEM

STEM 1 Understand the components of STEM
STEM 1.1 Understand the components of STEM and the impact of STEM on society
STEM 1.2 Explore the impact of STEM related careers

STEM 2 Understand the foundation of STEM in aviation
STEM 2.1 Identify how STEM is applied in the field of aviation
STEM 2.2 Evaluate careers related to aviation

STEM 3 Understand the foundation of STEM in relation to energy
STEM 3.1 Identify the application of STEM in the field of energy and/or energy production
STEM 3.2 Explore the career opportunities in the field of energy related to STEM

STEM 4 Understand the foundation of STEM in engineering
STEM 4.1 Understand how STEM is a part of all aspects of engineering
STEM 4.2 Evaluate the career opportunities associated with engineering

STEM 5 Understand the foundation of STEM in robotics
STEM 5.1 Explore the relationship between STEM and robotics
STEM 5.2 Evaluate the career opportunities associated with the field of robotics

Middle School Mechatronics/Robotics

MSMR 1 Understand the components that make up a robot
MSMR 1.1 Know the equipment used in robotics
MSMR 1.2 Identify various mechanical systems used in robotics
MSMR 1.3 Demonstrate the use of programming commands

MSMR 2 Investigate the impact of robotics on our society
MSMR 2.1 Compare and contrast robotics labor vs. human labor
MSMR 2.2 Explore career outlook for robotic applications
MSMR 2.3 Explore new entrepreneurial opportunities using robotics

MSMR 3 Design a robot to solve a particular problem
MSMR 3.1 Identify robotic applications
MSMR 3.2 Propose a robotic design
MSMR 3.3 Construct a functional robot
MSMR 3.4 Program a robot to perform a specific task
MSMR 3.5 Evaluate robot programming

[Aviation pathway]

Aviation

AV 1 Identify events in the history of flight
- AV 1.1 Identify flight in the ancient world
- AV 1.2 Identify the development of flight in the early 1900s
- AV 1.3 Identify the development of flight during the Golden Age of Flight (1918 to 1939)
- AV 1.4 Identify the development of flight innovation during World War II (1939 to 1945)
- AV 1.5 Identify the development of flight innovation during the Cold War (1945 to 1991)
- AV 1.6 Identify the development of flight innovation 1991 to present
- AV 1.7 Analyze current trends in flight

AV 2 Investigate the principles of flight
- AV 2.1 Investigate the basic parts and control surfaces on aircraft
- AV 2.2 Investigate the four forces of flight
- AV 2.3 Investigate basic aerodynamics
- AV 2.4 Investigate airplane stability

AV 3 Understand the flight environment
- AV 3.1 Comprehend air safety
- AV 3.2 Comprehend the airport layout, inclusive of safety elements
- AV 3.3 Comprehend airspace control
- AV 3.4 Comprehend radio communications

AV 4 Understand aircraft systems and performance
- AV 4.1 Know the basic aircraft instruments
- AV 4.2 Know aircraft systems
- AV 4.3 Predict aircraft performance
- AV 4.4 Calculate weight and balance

AV 5 Understand the relationships between weather and flight
- AV 5.1 Explain basic weather theory
- AV 5.2 Describe weather patterns and clouds
- AV 5.3 Explain weather hazards
- AV 5.4 Interpret weather data
- AV 5.5 Identify sources of weather information

AV 6 Understand navigation in aviation
- AV 6.1 Understand basic navigation
- AV 6.2 Understand dead-reckoning and pilotage
- AV 6.3 Utilize a flight computer
- AV 6.4 Utilize aeronautical charts
- AV 6.5 Comprehend radio navigation

AV 7 Understand aviation physiology
- AV 7.1 Know the effect on the body in the flight environment

AV 8 Understand aerospace science and technology
- AV 8.1 Understand key concepts affecting exploration of space
- AV 8.2 Understand basic rocket theory and space flight
- AV 8.3 Analyze existing space platforms

AV 9 Explore the multiple careers in aviation
    AV 9.1 Investigate aviation career fields and occupations

PLTW Aerospace Engineering
[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

[Computer science pathway]
Information Systems
[Please refer to standards developed for *Introduction to Information Technology* under Information Technology cluster]

Computer Programming 1
[Please refer to standards developed for *Computer Programming 1 and 2* under Information Technology cluster]

C# Programming (see information technology)
[Please refer to standards developed for *Web Development* under Information Technology cluster]

PLTW Introduction to Computer Science
[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

[Robotics pathway]
Electronics
E 1 Determine general technical literacy skills
    E 1.1 Employ appropriate units and abbreviations in electronics
    E 1.2 Determine unknown values in multiple types of electronic circuits
    E 1.3 Identify proper terminology in electronics
E 2 Demonstrate proficiency in electronic safety
    E 2.1 Determine physiological responses to electrical shock
    E 2.2 Demonstrate proper safety procedures in the use of soldering and electronics testing equipment
E 3 Demonstrate proficiency in circuit assembly
    E 3.1 Construct a circuit using schematic symbols for identified components
    E 3.2 Construct circuit boards using correct soldering principles and techniques
    E 3.3 Determine cause of non-operational circuits
E 4 Determine proper use of electronic test equipment
    E 4.1 Measure resistance, voltage and current in circuits
    E 4.2 Classify equipment for signal analysis
E 5 Troubleshoot circuits for proper operation
    E 5.1 Calculate voltage, current and power solutions in circuits
    E 5.2 Troubleshoot solutions to analyze circuit operation
E 6 Explore electronics career options
    E 6.1 Research career opportunities in electronics fields

E 6.2 Explore career outlook for robotic applications

Engineering Design and Development

EDD 1 Identify a technologically related problem
- EDD 1.1 Examine current state of a problem
- EDD 1.2 Research solution options to solve problem
- EDD 1.3 Propose new solutions to solve problem
- EDD 1.4 Identify the best solution

EDD 2 Construct a prototype of the solution to a problem
- EDD 2.1 Construct a prototype to model solution
- EDD 2.2 Test prototype for effectiveness

EDD 3 Analyze test results for prototype performance
- EDD 3.1 Analyze test results
- EDD 3.2 Make decisions based on test result data
- EDD 3.3 Redesign the product to meet performance needs

EDD 4 Communicate solution(s) and the prototype for others
- Communicate solutions for product

Robotics

RBT 1 Identify components of a robotic system
- RBT 1.1 Describe the parts necessary to make a robot
- RBT 1.2 Examine the relationships among the subsystems

RBT 2 Understand safety procedures and ethical issues inherent to robotics
- RBT 2.1 Demonstrate proper safety procedures
- RBT 2.2 Determine how to apply Occupational Safety and Health Administration (OSHA) compliant lockout/tag-out procedures
- RBT 2.3 Examine current ethical issues

RBT 3 Construct, analyze and troubleshoot circuits
- RBT 3.1 Build circuit according to schematic diagram
- RBT 3.2 Calculate circuit parameters
- RBT 3.3 Measure circuit parameters
- RBT 3.4 Compare calculated and measured solutions to analyze circuit operation

RBT 4 Design, build and analyze a robotic system
- RBT 4.1 Build and program a robot to perform a specific task
- RBT 4.2 Test the robot for any flaws in hardware or bugs in software components
- RBT 4.3 Write a technical report evaluating the system performance

RBT 5 Research career opportunities and industry applications
- RBT 5.1 Explore career opportunities in the robotics field
- RBT 5.2 Investigate commercial application of robotic systems

[Energy pathway]

Electronics

[See above]

Engineering Design and Development
[See above]

Introduction to Energy/Power
EP 1 Analyze the history of energy/power sources
- EP 1.1 Examine the historical development of energy/power production
- EP 1.2 Assess the impact of energy/power on the way people live and work

EP 2 Examine the relationships among work, energy and power
- EP 2.1 Define work, power and energy
- EP 2.2 Examine the relationship between power and energy sources

EP 3 Understand the transmission of energy and power
- EP 3.1 Understand how a mechanical system operates
- EP 3.2 Understand the types of simple machines
- EP 3.3 Understand both liquid and gas forms of power transmission
- EP 3.4 Understand the laws that govern electricity

EP 4 Understand alternative energy
- EP 4.1 Understand the sources of alternative energy
- EP 4.2 Analyze the sources of alternative energy

EP 5 Implement safety with power technology
- EP 5.1 Examine safety issues relating to mechanical systems
- EP 5.2 Employ safety practices with fluids
- EP 5.3 Identify fire classification and extinguishers
- EP 5.4 Employ safety practices with electricity

EP 6 Understand scientific concepts for energy and power technology
- EP 6.1 Understand how energy converts from one form to another
- EP 6.2 Understand the categories of energy
- EP 6.3 Understand that an engine performing work exhausts thermal energy that cannot be retrieved to the surroundings
- EP 6.4 Understand which energy sources can be renewable and non-renewable

EP 7 Explore energy and power career options
- EP 7.1 Research career opportunities in energy and power fields

Alternative Energy Systems
AES 1 Understand the historical development of alternative energy systems
- AES 1.1 Understand the historical background of alternative energy generation
- AES 1.2 Analyze the role of society in the use of energy generation methods
- AES 1.3 Analyze the cultural, socioeconomic and political effects of alternative energy technologies
- AES 1.4 Understand the environmental impact of energy production and consumption

AES 2 Understand the types of major energy systems
- AES 2.1 Analyze the characteristics of wind energy generation systems
- AES 2.2 Analyze the characteristics of biomass energy generation systems
- AES 2.3 Analyze the characteristics of solar energy generation systems
- AES 2.4 Analyze the characteristics of geothermal energy generation systems

AES 2.5 Analyze the characteristics of traditional energy generation systems
AES 2.6 Model an alternative energy system
AES 3 Research alternative energy careers and trends in energy development
AES 3.1 Identify careers in alternative energy
AES 3.2 Identify future energy resources

[Engineering pathway]
Electronics
[See above]

Engineering Design and Development
[See above]

Introduction to Engineering
IE 1 Examine the fields of engineering
IE 1.1 Examine the evolution of engineering
IE 1.2 Identify the types of engineers
IE 1.3 Describe the engineering team
IE 2 Investigate various engineering systems
IE 2.1 Identify various types of engineering systems
IE 2.2 Apply engineering systems to solve problems
IE 3 Apply the engineering process to a product
IE 3.1 Design a product
IE 3.2 Construct a three-dimensional (3-D) model
IE 3.3 Build and test a prototype
IE 3.4 Develop a system to produce a final product
IE 4 Demonstrate effective communication
IE 4.1 Demonstrate effective oral communication
IE 4.2 Demonstrate effective written communication
IE 4.3 Demonstrate effective graphic communication
IE 5 Examine testing procedures used on materials in engineering
IE 5.1 Analyze materials based on their properties
IE 5.2 Analyze material testing procedures

Introduction to Manufacturing
[Recommended to be developed by manufacturing cluster]

Bioprocess Engineering
BE 1 Understand the basic concepts of bioprocess system and biotechnological processes
BE 1.1 Identify bio-based products
BE 1.2 Identify the microbial processes that can be implemented in bioprocessing
BE 1.3 Understand how biotechnology can be integrated with engineering
BE 2 Apply basic knowledge of biological science and engineering in developing products
BE 2.1 Understand how raw materials are used for developing products

BE 2.2 Understand how the chemical composition of a raw material affects the design process

BE 3 Identify issues associated with implementation and operation of biotechnological processes

BE 3.1 Analyze problems associated with bioprocessing; for example, environmental, technical, sustainable

BE 3.2 Understand how to operate a bioreactor

BE 4 Career exploration in bioprocess engineering

BE 4.1 Explore the role of bioprocess engineering in an agriculture related area

BE 4.2 Understand the role of bioprocess engineering in food processing

BE 4.3 Understand how bioprocess engineering is critical to water and wastewater treatment technologies

BE 4.4 Understand how bioprocess engineering can improve the rural economy

BE 5 Understand workplace ethics and professionalism in bioprocess engineering

BE 5.1 Investigate and demonstrate understanding of professionalism and workplace ethics in the technological environment

BE 6 Understand safety and health in bioprocessing engineering

BE 6.1 Understand implications of health and public safety standards

Introduction to Drafting & Design

[See standards for *Introduction to Drafting and Design* under Architecture and Construction cluster]

Mechanical Drafting & Design

[Recommended to be developed by manufacturing cluster]

Architectural Drafting

[See standards for *Architectural Drafting* under Architecture and Construction cluster]

PLTW Introduction to Engineering Design

[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

PLTW Principles of Engineering

[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

PLTW Digital Electronics

[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

PLTW Civil Engineering & Architecture

[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

PLTW Biotechnical Engineering

[Standards for Project Lead The Way courses are provided to schools offering PLTW curricula]

A cover letter has been drafted to guide business/industry feedback to the standards developed through this process. The ten standards documents will be reformatted with three columns for business/industry feedback at the sub-indicator level utilizing a 1 (low) to 5 (high) scale:

- Is the sub-indicator essential?
- Is the sub-indicator clear and specific?
- Is the sub-indicator measurable?

Business/industry partners are also asked if the standards reflect the preparation necessary for a student to enter her/his particular occupational field. Following business/industry review, state staff will revise the standards documents as necessary to incorporate business/industry suggestions. The revised documents will be shared with participants in the standards development process and, eventually, with teachers of architecture and construction courses throughout the state for their feedback. Final documents will be taken through public hearings and delivered to the State Board of Education for adoption.

A sample of the reformatted document follows.

Course Standards

STEM 1: Understand the components of STEM

			Essential 1 (low) – 5 (high)	Clear and Specific 1 (low) – 5 (high)	Measurable 1 (low) – 5 (high)
Webb Level	*Sub-indicator*	*Integrated Content*			
	STEM 1.1 Understand the components of STEM and the impact of STEM on society				
	Examples:				
Three Strategic Thinking	• Investigate and explore the components of STEM and its global impact.				
One Recall	• Identify components of STEM and explore the role of STEM in society				
Two Skill/ Concept	• Observe and Investigate where STEM appears in daily life				
Three Strategic Thinking	• Analyze how STEM has impacted the student's life				
	STEM 1.2 Explore the impact of STEM related careers				
	Examples:				
Two Skill/ Concept	• Research, explore and analyze how STEM is involved in careers globally				
One Recall	• Explore different fields of work related to STEM based career				
Two Skill/ Concept	• When given a STEM based career, research education commitment, cost requirements and financial benefits	Research, language arts, math			