006.54 Skilled and Technical Sciences Education – Skilled Specific.

006.54A Grade Levels: 9-12

006.54B Endorsement Type: Supplemental. This endorsement requires an applicant to hold, or earn concurrently, an endorsement in Agricultural Education or Skilled and Technical Sciences ~~Industrial Technology~~ Education and be eligible for the Work-Based Learning endorsement.

006.54C Persons with this endorsement may teach Skilled and Technical Sciences Education – Skilled Specific ~~(formerly Trade and Industrial Education) in grades 9 through 12~~.

006.54D Certification Endorsement Requirements: This endorsement requires the following:

006.54D1 A minimum of 12 semester hours in one of the specific career fields ~~areas~~ listed below~~:~~ and one (1) semester hour of coursework in SkillsUSA. The candidate must also meet requirements to qualify for an Occupational Safety and Health Administration (OSHA) 10 card:

006.54D1a Architecture and Construction Career Field ~~Area~~:

006.54D1a(1) Design and Pre-Construction; or
006.54D1a(2) Construction~~; or~~
~~006.54D1a(3) Maintenance and Operations~~

006.54D1b Energy and Engineering ~~Science Technology, Engineering, and Mathematics (STEM)~~ Career Field ~~Area~~:

006.54D1b~~c~~(1) Energy; or ~~Engineering and Technology~~
006.54D1b(2) Engineering; or
006.54D1b(3) Robotics

006.54D1c Manufacturing Career Field ~~Area~~:

~~006.54D1b(1) Health, Safety and Environmental Assurance; or~~
~~006.54D1b(2) Logistics and Inventory Control; or~~
006.54D1c~~b~~(1)~~(3)~~ Maintenance, Installation, and Repair; or
~~006.54D1b(4) Manufacturing Production Process Development; or~~
006.54D1b(2)~~(5)~~ Production; or
~~006.54D1b(6) Quality Assurance~~
006.54D1b(3) Automation

006.54D1d Transportation, Distribution and Logistics Career Field ~~Area~~:

006.54D1d(1) Facility and Mobile Equipment Maintenance; or
~~006.54D1d(2) Health, Safety and Environmental Management; or~~
~~006.54D1d(3) Logistics Planning and Management Services; or~~

006.54D1d(2)~~(4)~~ Multi-modal Transportation~~/Systems Infrastructure; or~~

~~006.54D1d(5) Warehousing and Distribution Center Operations~~ and

006.54D1e A minimum of one (1) semester hour of coursework in SkillsUSA.

006.54~~E~~D2 Work Experience: The endorsement is available only to those persons who have either ~~006.54D2a~~ (A) 1,000 verified hours of paid ~~employment~~ work-based experience relevant to the career field, or (B) at least 300 hours of supervised work experience relevant to the career field under the direction of the college or university recommending the endorsement. ~~in the industry in which the specific career area coursework is taken; or~~

~~006.54D2b 500 hours of verified paid employment in the industry in which the specific career area coursework is taken plus a valid nationally recognized trade certification/licensure in the career area in which the specific career area coursework is taken.~~

006.54F~~E~~ Endorsement Program Requirements: Nebraska teacher education institutions offering this endorsement program must have on file, within the institution, a plan which identifies the courses and the course completion requirements which the institution utilizes to grant credit toward completion of this endorsement.

THE FOLLOWING ARE RECOMMENDED GUIDELINES FOR INCLUSION AS PART OF THE INSTITUTION'S PLAN UNDER THIS ENDORSEMENT.

Through the courses identified in its plan, the institution must provide candidates for this endorsement with opportunities to demonstrate the dispositions and competencies required by the following guidelines ~~should prepare prospective teachers to~~:

Standard 1. Demonstrate teaching and technical skills appropriate to successfully teach the study of skilled and technical sciences in one of the following specific career fields:

Element 1. Architecture and Construction Knowledge and Skills in:

1a. Design and Pre-Construction and
1b. Construction;

Element 2. Energy and Engineering Knowledge and Skills in:

2a. Energy,
2b. Engineering, and
2c. Robotics;

Element 3. Manufacturing Knowledge and Skills in:

3a. Production,
3b. Maintenance, Installation, and Repair and
3c. Automation;

Element 4. Transportation, Distribution, and Logistics Knowledge and Skills in:

4a. Facility and Mobile Equipment Maintenance and
4b. Multi-modal Transportation.

Element 5. Demonstrate knowledge of leadership and personal development experiences through the SkillsUSA career and technical student organization.

Standard 2. Demonstrate professionalism with an emphasis in the following areas:

Element 1. Professional growth, reflection, and evaluation;

1a. Candidates are aware of and reflect on their practice in light of research on teaching and learning, professional ethics, and resources available for professional learning;

1b. Candidates continually evaluate the effects of their professional decisions and actions on students, families, and other professionals in the learning community, and

1c. Candidates actively seek out opportunities for ongoing professional development, especially by engagement in professional organizations, conferences, in-service workshops, and other professional opportunities; and

Element 2. Collaboration with families, colleagues, and community.

2a. Candidates engage in and reflect on a variety of experiences related to skilled and technical sciences that demonstrate understanding of and readiness for leadership, mentoring, collaboration, and community engagement and involvement.

~~A. Describe a personal philosophy regarding Skilled and Technical Science Education based on current research findings, and the application of that philosophy in curriculum and instructional design, assessment, and professional development, including being able to:~~

~~1. Design programs based on a mission statement with stated goals and objectives which reflect the definition and intent of Skilled and Technical Science Education; and,~~

~~2. Use an organized set of concepts, processes and systems that are technological when designing course outlines, instructional strategies, and evaluations of student work.~~

B. Demonstrate teaching and technical skills appropriate to successfully teaching the study of Skilled and Technical Science, including being able to:

1. Demonstrate knowledge and an understanding of the development of industry, its effects on people, the environment and culture; its organization, personnel systems and techniques, as well as resources and products and their impact on society and culture;
2. Use instructional content from a specific skilled and technical science education area at an industry level standard as determined by the institution;
3. Identify the use of contextual academics used in the skilled and technical science area;
4. Incorporate employability skills training into the teaching program;
5. Identify and incorporate safe and efficient use of contemporary technological tools, instruments, and machines into a program of study;
6. Incorporate insight, knowledge, and applications of technological concepts, processes and systems into a teaching program;
7. Use skills, creative abilities, positive self-concepts, and individual potentials in teaching skilled and technical sciences;
8. Apply problem-solving and creative abilities involving human and material resources, processes, and technological systems;
9. Use activity-oriented laboratory instruction which reinforces abstract concepts through concrete experiences;
10. Apply technology to the design and production of activities for student use;
11. Design Skilled and Technical Science Education programs that advance student attitudes, knowledge, and skills regarding how skilled and technical science systems function;
12. Facilitate the ability of students to apply skilled and technical sciences knowledge and skills, and to assess new or different past-present-future skilled and technical science systems; and
13. Manage a work-based learning program which includes the supervision of students in the workplace.

C. Demonstrate the ability to develop, manage, and evaluate a Skilled and Technical Science Education program in schools, including being able to:

1. Demonstrate a philosophy and understanding of career education;
2. Design a strategic program plan that includes a mission statement, rationale for change, goals and objectives, action steps, and program evaluation strategies;
3. Select content based on the goals and objectives appropriate to the specific skilled and technical science content;

4. Structure an educational environment in the classroom and laboratory to advance the instructional process including:
    a. Contextual academics;
    b. Technical skills based on national standards;
    c. Employability skills;
    d. Safety training and daily practice;
5. Select appropriate instructional technologies to effectively teach all student populations;
6. Demonstrate laboratory management (i.e., inventory, requisitioning equipment and materials, maintenance, and budgeting);
7. Integrate career student organizations into the curriculum;
8. Communicate and promote a learning environment that reflects the real world and provides tangible and intangible benefits for the student and the community;
9. Organize and coordinate an external advisory committee; and,
10. Use standards to evaluate and revise Skilled and Technical Science Education programs, including being able to identify standards for the program, establish a process for using the standards, and utilize findings for subsequent program revisions.

D. Demonstrate attitudes, knowledge, and skills needed for success as a teacher in Skilled and Technical Science Education, including being able to:

1. Create, revise, and analyze and implement curricula to prepare students for a dynamic and rapidly changing world. The Skilled and Technical Science Education teacher prepares students:
    a. For initial employment and careers in a specific skilled and technical science area;
    b. For their roles as consumers and citizens;
    c. For advanced education in skilled and technical science areas;
    d. For roles as employees, owners and managers of skilled and technical science businesses;
    e. To understand domestic industries and how they are similar to and different from global industries; and,
    f. To access and apply current industrial technologies;
2. Organize classroom and laboratory experiences for the study of skilled and technical science;
3. Manage technological activities in both an individual and group setting;

4. Demonstrate positive and effective management techniques to include programs, learning environment, and activities outside the classroom that support and complement the program;
5. Apply multi-cultural and global perspectives as they relate to the study of skilled and technical science;
6. Demonstrate an understanding of the role and function of skilled and technical science in the global society; and,
7. Apply values and ethics as they relate to content issues in the study of skilled and technical science.

E. Facilitate collaborative learning by having students work together in groups that may include students, teachers, business and industry leaders, and others.

F. Demonstrate an understanding of and be able to apply skilled and technical science concepts, principles and processes in the specified career pathway.

G. Identify concepts and strategies needed for career exploration, development and growth in skilled and technical science areas.

H. Facilitate students in the realization of their full potential through career development.