

8710.8030 TEACHERS OF MANUFACTURING CAREERS.

Subpart 1. **Scope of practice.** A teacher of manufacturing careers is authorized to provide students in grades 7 through 12 instruction that is designed to develop an effective understanding of the following areas:

- A. academic foundations specific to the manufacturing field;
- B. standard safety and environmental practices;
- C. manufacturing career exploration and investigation;
- D. industry skills standards for manufacturing technology; and
- E. ethics and legal responsibilities in manufacturing.

Subp. 2. **Licensure requirements.** A candidate for licensure as a teacher of manufacturing careers shall have completed at least a baccalaureate degree from a regionally accredited college or university and a teacher preparation program approved under chapter 8705 including:

- A. the standards of effective practice under part 8710.2000;
- B. the core skills for teachers of career and technical education under part 8710.8000; and
- C. the standards under subpart 3.

Subp. 3. **Subject matter standard.** A candidate for licensure as a teacher of manufacturing careers must complete at least a baccalaureate degree from a regionally accredited college or university and a preparation program under subpart 2 that must include the candidate's demonstration of the knowledge and skills in items A to E.

A. A teacher of manufacturing careers must demonstrate the knowledge and applications of academic subject matter required for proficiency in the following areas:

- (1) knowledge of math and science to manufacturing situations within specific manufacturing careers;
- (2) technical reading and writing in a manufacturing environment such as creating and interpreting graphs, charts, manuals, journals, and specifications;
- (3) problem solving in mathematical applications such as equations, formulas, and processes; and
- (4) applying manufacturing terminology for communication with co-workers, customers, and employers.

B. A teacher of manufacturing careers must demonstrate knowledge and application of safety principles according to the rules and regulations of:

- (1) the Occupational Safety and Health Administration (OSHA);
- (2) the Environmental Protection Agency (EPA); and

(3) the material safety data sheets (MSDS).

C. A teacher of manufacturing careers must demonstrate knowledge and application of manufacturing careers by:

- (1) describing potential manufacturing careers;
- (2) describing the levels of education, licensing/certification requirements, employment opportunities, workplace environments, potential salaries, and career growth potential; and
- (3) utilizing personal occupational experiences to make manufacturing careers meaningful to the students.

D. A teacher of manufacturing careers must demonstrate the knowledge and ability of the processes used to take a blueprint and manufacture a product from beginning to end using industry standards. These processes include:

- (1) general processes for manufacturing technology include: blueprint reading, layout techniques, hand tool processes/identifications, measurement techniques, metallurgy, sawing techniques, abrasive processes, drilling techniques, quality control, jigs, fixtures and fasteners, accreditation/certification, laser processes, water cutting, robotics, fluid power systems, foundry processes, sheet metal processes, forging processes, and plastic technologies;
- (2) specific processes for machine trades including: precision measurement techniques, milling processes, turning processes, forming processes, precision grinding, numerical control, plastics/laminates processes, electrical discharge machining processes, stereo-lithography, tool and cutter grinding, computer aided drafting (CAD), computer aided machining (CAM), and geometric tolerancing; and
- (3) specific processes for welding trades including: electrical polarities, electrode classifications, plasma arc cutting (ARC), oxy, fuel cutting (OFC), automatic cutting processes, gouging processes, oxy, acetylene welding (OAW), shielded metal arc welding (SMAW), gas metal arc welding (GMAW), flux core arc welding (FCAW), gas tungsten arc welding (GTAW), submerged arc welding (SAW), plasma arc welding (PAW), hard facing processes, and weld testing (nondestructive/destructive).

E. A teacher of manufacturing careers must demonstrate knowledge and application of legal responsibilities and ethical practices in manufacturing including:

- (1) morality and ethics and the relationship of each to manufacturing occupations, such as falsifying documents;
- (2) legal and policy issues impacting manufacturing industries, such as errors and omissions, negligence liabilities, and environmental issues and concerns;
- (3) understanding the importance of customer satisfaction, such as on-time delivery and quality control;
- (4) employee protection documents, such as the Right to Know regulations; and

(5) requirements for reporting and documentation of any activity that adversely affects the welfare of customers and fellow workers, such as incident reports and hazardous material spills.

Subp. 4. [Repealed, 47 SR 986]

Statutory Authority: *MS s 122A.09; 122A.18*

History: *26 SR 700; 30 SR 1054; L 2017 1Sp5 art 12 s 22*

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