Agricultural Structures Design and Fabrication (One Credit) (2015)

Implementation. A

1 The provisions of this section shall be implemented by school districts beginning with the 2017-2018 school year. A.1

2 School districts shall implement the employability skills student expectations listed in §127.15(d)(2) of this chapter (relating to Career and Technical Education Employability Skills) as an integral part of this course. A.2

General requirements. This course is recommended for students in Grades 11 and 12. Recommended prerequisite: Agricultural Mechanics and Metal Technologies. Students shall be awarded one credit for successful completion of this course. B

b General requirements. This course is recommended for students in Grades 11 and 12. Recommended prerequisite: Agricultural Mechanics and Metal Technologies. Students shall be awarded one credit for successful completion of this course. B

Introduction. C

1 Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. C.1

2 The Agriculture, Food, and Natural Resources Career Cluster focuses on the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources. C.2

3 In Agricultural Structures Design and Fabrication, students will explore career opportunities, entry requirements, and industry expectations. To prepare for careers in mechanized agriculture and technical systems, students must attain knowledge and skills related to agricultural structures design and fabrication. To

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prepare for success, students need opportunities to learn, reinforce, apply, and transfer their academic knowledge and technical skills in a variety of settings. C.3

4 **Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other organizations that foster leadership and career development in the profession such as student chapters of related professional associations.** C.4

5 **Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.** C.5

Knowledge and skills. D

1 **The student develops a supervised agriculture experience program. The student is expected to:** D.1

- A plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity; D.1.A
- B apply proper record-keeping skills as they relate to the supervised agriculture experience; D.1.B
- C participate in youth leadership opportunities to create a well-rounded experience program; and D.1.C
- D produce and participate in a local program of activities using a strategic planning process. D.1.D

2 **The student demonstrates principles of facilities design and fabrication related to agricultural structures. The student is expected to:** D.2

- A develop building plans; D.2.A
- B select site and locate agricultural building placement; D.2.B
- C estimate materials and costs needed for construction with an emphasis on renewable and eco-friendly materials; D.2.C
- D select appropriate environmental control systems with a special emphasis on green technology; and D.2.D
- E use computer-aided design software as appropriate. D.2.E

3 **The student explores the different types of power systems used in agricultural structures. The student is expected to:** D.3

- A define the terms and principles of electricity; D.3.A
- B estimate electrical needs and loads; D.3.B
- C plan installations using local codes and National Electric Code guidelines; D.3.C
- D demonstrate the use of various meters; D.3.D
- E select circuit wiring materials and supplies; D.3.E
- demonstrate electrical systems repair; and D.3.F
- explore alternative power systems, including solar, wind, and biomass. D.3.G

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4 **The student constructs agricultural structures using appropriate technology. The student is expected to:** D.4

- A demonstrate appropriate use of surveying equipment; D.4.A
- B demonstrate and apply Geographic Information System (GIS) and Global Positioning System (GPS) principles; D.4.B
- C reinforce, place, finish, and cure concrete; D.4.C
- D plan, establish, and maintain water-management systems; D.4.D
- E identify non-traditional structural building techniques, including industry trends that are eco-friendly; D.4.E
- F discuss the use of masonry and drywall construction; D.4.F
- G install doors, windows, and roofing materials; and D.4.G
- H install plumbing equipment and fixtures to comply with governmental regulations and applicable codes. D.4.H

5 **The student demonstrates metal construction techniques related to agricultural design and fabrication of structures. The student is expected to:** D.5

- A explain the operations of safe oxy-fuel cutting; and D.5.A
- B demonstrate safe electrical welding. D.5.B