**§130.23. Agricultural Facilities Design and Fabrication (One to Two Credits).**

(a)  General requirements. This course is recommended for students in Grades 11-12.

(b)  Introduction. To be prepared for careers in mechanized agriculture and technical systems, students attain knowledge and skills related to agricultural facilities design and fabrication. Students explore career opportunities, entry requirements, and industry expectations. To prepare for success, students reinforce, apply, and transfer their academic knowledge and technical skills in a variety of settings.

(c)  Knowledge and skills.

(1)  The student learns and applies the employability characteristics of a successful employee. The student is expected to:

(A)  identify career development and entrepreneurship opportunities in the field of mechanized agriculture;

(B)  apply competencies related to resources, information, interpersonal skills, and systems of operation of mechanized agriculture;

(C)  demonstrate knowledge of personal and occupational health and safety practices in the workplace;

(D)  identify employers' expectations, including appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills; and

(E)  research licensing, certification, and credentialing requirements.

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

(A)  develop building plans;

(B)  select site and locate agricultural building placement;

(C)  estimate materials and costs needed for construction with an emphasis on renewable and eco-friendly materials;

(D)  select appropriate environmental control systems with a special emphasis on green technology; and

(E)  use computer-aided design software as appropriate.

(3)  The student plans, constructs, and maintains fences, corrals, and other agricultural enclosures. The student is expected to:

(A)  select site and locate enclosures;

(B)  estimate materials and building costs; and

(C)  define appropriate construction methods that are friendly to the environment.

(4)  The student explores the different types of power systems used in agricultural facilities. The student is expected to:

(A)  define the terms and principles of electricity;

(B)  estimate electrical needs and loads;

(C)  plan installations using local codes and National Electric Code guidelines;

(D)  demonstrate the use of various meters;

(E)  select circuit wiring materials and supplies;

(F)  demonstrate electrical systems repair; and

(G)  explore alternative power systems, including solar, wind, and biomass.

(5)  The student constructs agricultural structures using appropriate technology. The student is expected to:

(A)  demonstrate appropriate use of surveying equipment;

(B)  demonstrate and apply Geographic Information System (GIS) and Global Positioning System (GPS) principles;

(C)  form and pour concrete slabs;

(D)  plan, establish, and maintain water-management systems;

(E)  identify non-traditional structural building techniques, including industry trends that are eco-friendly;

(F)  discuss the use of masonry and drywall construction; and

(G)  install doors, windows, and roofing materials.

(6)  The student demonstrates metal construction techniques related to agricultural design and fabrication. The student is expected to:

(A)  explain the operations of safe oxy-fuel cutting; and

(B)  demonstrate safe electrical welding.

(7)  The student develops an advanced supervised agriculture experience program as it relates to agriculture, food, and natural resources. The student is expected to:

(A)  plan, propose, conduct, and evaluate entrepreneurship; placement; exploratory; research, either experimental or analytical; improvement; supplementary; laboratory-based; or other identified, supervised agricultural experience as an experiential learning activity;

(B)  apply proper record-keeping skills as they relate to a supervised experience;

(C)  design and use a customized record-keeping system for the individual supervised experience;

(D)  participate in youth leadership opportunities to create a well-rounded experience program in agriculture; and

(E)  produce a challenging approach for a local program of activities in agriculture.