PROPOSED REGULATION OF
THE STATE BOARD OF EDUCATION

LCB File No. R144-11

Explanation: All matter in ***italics*** is new.

AUTHORITY: NRS 385.080 & NRS. 388.360

Section 1. NAC 389 is hereby amended as follows:

NAC 389.523 Agricultur~~[al]~~ mechanical engineering technology e*quipment fabrication systems*. (NRS 385.080**,** 385.110**)** A course of study in agricultural mechanical engineering technology must be designed so that pupils meet the following performance standards by the completion of the final course of instruction:

1. For the area of ***shop*** safety ***procedures***:

~~[(a) Demonstrate and practice general shop safety and those practices specific to the learning activity; and]~~

(~~[b]~~a) Understand personal and group safety ~~[while working in an agricultural mechanics environment]~~.

2. For the area of welding ***procedures***:

~~[(a) Understand the principles and application of welding and, where applicable, cutting, and be able to explain the role of heat and the process of fusion.~~

~~(b)]~~ Practice safe~~[ty]~~, ***and*** demonstrate ~~[equipment setup and maintenance, appropriate]~~ ***proper*** welding ***techniques*** ~~[procedures and, where applicable, cutting procedures, and practice proper tool selection]~~ while using~~[:]~~

(~~[1]~~***a*** Oxy-fuel ~~[welding]~~ ***cutting (OFC)***;

(~~[2]~~***b***) Shielded metal arc welding (***SMAW***);

(~~[3]~~***c***) Gas metal ~~[and]~~ arc welding (***GMAW)***;

(~~[4]~~***d***) Gas tungsten arc welding (***GTAW***); and

(~~[5]~~***e***) ~~[Air arc and]~~ plasma cutting ***(PAC***) procedures.

(3) For the area of ***principles of*** electricity ***in agriculture***, ~~[understand the principles of generation, distribution and application of electricity in agricultural and industrial settings, as demonstrated by the pupil's ability to]~~:

(a) ~~[Understand]~~ and ~~[use safe practices and procedures during learning activities appropriate to agricultural electrification]~~ ***Understand the principles and theories of electricity in agriculture***

(b) ~~[Recognize]~~ ***Apply*** principles and theories of electricity;

(c) ~~[Describe appropriate use and application of electrical conductors and over-current protection theories of electrical circuits~~

~~(d) Recognize standard components of electrical systems;~~

~~(e) Understand, design and construct electrical circuits; and~~

~~(f) Demonstrate proficiency in the use of electrical meters and test equipment.]~~

(4) For the area of ~~[agricultural industry]~~ water ***and wastewater*** management~~[, understand the principles and applications of water and wastewater management as they relate to the]~~ ***in*** agricultural and industrial settings, ~~[as demonstrated by the pupil's ability to:]~~

(~~[1]~~***a***) ~~[Understand and use]~~ ***Demonstrate*** safe practices and procedures in ~~[the management of]~~ ***agricultural and industrial*** water ***management*** ~~[in the agricultural and industrial settings]~~;

(~~[2]~~***b***) ~~[Understand the theory and design of various water transfer systems; and]~~ ***Demonstrate basic pipe fitting skills.***

~~[(3) Understand the application of various components relating to water transfer systems.~~

~~(c]~~ ***5***)For the area of ~~[concrete]~~ ***construction***~~[, understand the principles and applications of concrete in agricultural and industrial construction, as demonstrated by the pupil's ability to:~~

~~(a) Understand and use]~~ ***Demonstrate*** ~~[safe]~~ practices, ***applications*** and procedures ~~[with concrete]~~ ***of drafting in agriculture projects***~~;~~

~~[(2]~~b~~[) Know]~~ ***Demonstrate practices and procedures in construction of agricultural projects***.

~~[the components and ratios of various mixtures of concrete; and~~

~~(3) Demonstrate knowledge of proper concrete applications and construction.~~

~~(f) For the area of fencing, understand the agricultural and industrial applications of fencing, as demonstrated by the pupil's ability to:~~

~~(1) Understand and use safe practices and procedures in the construction of agricultural and industrial fencing;~~

~~(2) Describe the application of various types of fencing systems; and~~

~~(3) Understand the design and installation of various types of fencing systems.~~

~~(g) For the area of agricultural and industrial drafting, attain proficiency in agricultural and industrial drafting, as demonstrated by the pupil's ability to:~~

~~(1) Understand the use of various types of drafting plans; and~~

~~(2) Prepare and use drafting plans appropriate to the learning activity.~~

~~(h)For the area of agricultural and industrial buildings, understand the applications of agricultural and industrial buildings, as demonstrated by the pupil's ability to:~~

~~(1) Understand and use safe practices and procedures associated with the construction of agricultural and industrial buildings;~~

~~(2) Understand different types of buildings used in the agricultural industry;~~

~~(3) Select and design the appropriate building for a specific agricultural application;~~

~~(4) Demonstrate the skills necessary for the appropriate maintenance and repair of agricultural buildings; and~~

~~(5) Construct a selected agricultural building.]~~

(~~[i]~~***6***) For the area of ~~[small engine power and equipment]~~ ***single and multiple cylinder engines***, ~~[understand the principles and applications of small engine power and equipment in an agricultural setting, as demonstrated by the pupil's ability to:~~

~~(1]~~***a***) ~~[Understand and use]~~ ***demonstrate*** safe practices and procedures ~~[associated with]~~ ***of*** the operation, maintenance and repair of small ***gas*** engines and equipment;

(~~[2]~~***b***) ~~[Show]~~ ***Demonstrate*** a working knowledge of ***the*** essential engine operating systems;

(~~[3]~~***c***) Recognize appropriate power attachments and their applications~~[; and~~

~~(4) Demonstrate the skills necessary for the appropriate maintenance and repair of small gasoline engines and their power attachments.~~

~~(j]~~7) For the area of ***agricultural machinery*** ~~[and power tools, identify and demonstrate the proper use of hand and power tools in agricultural settings, as demonstrated by the pupil's ability to]~~:

([~~1~~]*a*) ***Demonstrate safe practices and procedures associated with the operation, maintenance and repair of agricultural machinery and equipment;***
~~[(2) Show a working knowledge of and demonstrate the safe use of hand and power tools;~~
~~(3) Select and use the appropriate tool for a task; and~~
~~(4) Demonstrate the skills necessary for the appropriate maintenance and repair of hand and power tools.]~~
([~~k~~]*8*) For the area of ***hand and power tools*** ~~[gasoline and diesel power, understand the basic principles, operations and maintenance of gasoline and diesel engines used in agricultural settings, as demonstrated by the pupil's ability to]~~:
([~~1~~]***a***~~[~~) ~~Understand and use safe practices and procedures with gasoline and diesel engines used in agricultural settings]~~ ***Identify and demonstrate the proper use of agricultural hand and power tools***
([~~2~~]***b***) ~~[Demonstrate knowledge of the theoretical operation of a multiple cylinder engine; and]~~ ***demonstrate appropriate procedures for the maintenance and repair of hand tools.***
~~[(3) Demonstrate the skills necessary for the appropriate maintenance and repair of multiple cylinder engines .~~
~~(l) For the area of hydraulics, understand the basic principles, operations and maintenance of hydraulic systems used in agricultural settings, as demonstrated by the pupil's ability to:~~
~~(1) Understand and use safe practices and procedures appropriate for hydraulic systems used in agricultural settings;~~
~~(2) Demonstrate a knowledge of the basic principles of hydraulics;~~
~~(3) Identify the components of hydraulic systems;~~
~~(4) Demonstrate the skills necessary for the appropriate maintenance and repair of hydraulic system; and~~
~~(5) Design and build hydraulic systems to be used in an agricultural application.~~
~~(m) For the area of agricultural industrial machinery, understand and demonstrate basic skills in the operation, maintenance and repair of agricultural industrial machinery, as demonstrated by the pupil's ability to:~~
~~(1) Understand and use safe practices and procedures associated with the operation, maintenance and repair of agricultural industrial machinery~~
~~(2) Understand the theoretical operation of agricultural machinery;~~
~~(3) Demonstrate the skills necessary for the appropriate maintenance and repair of agricultural machinery; and~~
~~(4) Demonstrate the skills necessary for the safe operation of agricultural machinery, including tractors.]~~
([~~n~~]*9*) For the area of electrical power, ~~[understand and demonstrate the operation, maintenance and use of electrical power,]~~ ***motors and controls*** in agricultural applications, ~~[as demonstrated by the pupil's ability to:]~~
([~~1~~]***a***) ~~[Understand and use safe practices and]~~ ***Demonstrate*** procedures associated with the operation, maintenance and repair of electrical power;
~~[(2) Describe the basic principles and operation of electric motors and controls;~~
~~(3) Design and build an electric system using motors and controls; and~~
~~(4) Demonstrate the skills necessary for the appropriate maintenance and repair of electrical motor and control systems.]~~
([~~o~~]***10***) For the area of supervised agricultural experience: ~~[as demonstrated by the pupil's ability to actively engage in and manage a supervised agricultural experience in a manner that enables~~

~~the pupil to develop skills necessary for a career in agricultural mechanical engineering technology.~~]

(a) Actively develop and participate in SAE, which enables students to obtain work-based skills.

(~~p~~*11*) For the area of leadership ***training through membership in*** [~~and Future Farmers of America~~] ***FFA***: [~~recognize the traits of effective leaders and participate in leadership training through active membership in the Future Farmers of America, as demonstrated by the pupil's ability to understand the basic principles of an organizational framework, communication, group dynamics, team building and the management of (q) For the area of skills necessary to obtain employment, demonstrate:~~]

[~~(1)~~***a***~~)~~] ***Recognize the traits of effective leaders and participate in leadership training through involvement in FFA.*** [~~Skills necessary for solving problems;~~

~~(2) Skills of critical thinking~~] ***Understand the opportunities in FFA***[~~;~~

~~(3) The ability to speak, write and listen effectively~~] ***Understand the importance of school and community awareness.***[~~;~~

~~(4) The ability to select, apply and maintain appropriate technology necessary for a career;~~

~~(5) Skills of leadership and teamwork;~~

~~(6) An awareness of the ethical behavior appropriate for the workplace;~~

~~(7) An ability to manage effectively resources in the workplace;~~

~~(8) Skills necessary for the planning and development of a career; and~~

~~(9) Skills necessary for retention of a job and continuation of learning throughout a career.~~]

(Added to NAC by Bd. of Education by R010-03, eff. 10-30-2003)

NAC 389.XXX Agricultural mechanical engineering technology power systems A course of study in agricultural mechanical engineering technology must be designed so that pupils meet the following performance standards by the completion of the final course of instruction:

1. For the area of general shop safety:

(a) Understand personal and group safety

2. For the area of welding:

(a) Demonstrate safe and proper techniques in Oxy-fuel welding (OFW);

(b) Demonstrate safe and proper techniques in Shielded Metal Arc Welding (SMAW)

3. For the area of electricity:

(a) Understand principles and theories of electricity;

(b) Apply the principles and theories of electrical circuits.

4. For the area of agricultural water and wastewater management in an agricultural and industrial settings,

(a) Demonstrate safe practices and procedures in agricultural and industrial water management;

(b) Understand the theory and design of various water transfer systems and pumps;

5. For the area of agricultural construction:

(a) Demonstrate practices, applications and procedures of drafting in agricultural construction;

(b) Demonstrate practices, and procedures associated with the construction of agricultural buildings;

6. For the area of applications of single and multiple cylinder engines:

(a) Demonstrate safe practices and procedures associated with the operation, maintenance and repair of small gas engines and equipment;

(b) Demonstrate a working knowledge of essential engine operating systems;
(c) Recognize appropriate power attachments and their applications
(d) Demonstrate maintenance and repair procedures on single and multiple cylinder engines and attachments
7. For the area of operation, maintenance and repair of agricultural machinery:
(a) Demonstrate safe practices and procedures of operation, maintenance, and repair of agricultural machinery and equipment
8. For the area of hand and power tools:
(a) Identify general shop hand and power tools;
(b) Demonstrate appropriate procedures for the maintenance and repair of hand tools.
9. For the area of electrical power, motors and controls in agricultural applications:
(a) Demonstrate procedures associated with the operation, maintenance, and repair of electrical power:
10. For the area of agricultural hydraulic systems:
(a) Demonstrate procedures appropriate to hydraulic systems in the agricultural industry;
11. For the area of supervised agricultural experience:
(a) Actively develop and participate in SAE, which enables students to obtain work-based skills.
12. For the area of leadership training through membership FFA:
(a) Recognize the traits of effective leaders and participate in leadership training through involvement in FFA.
(b) Understand the opportunities in FFA;
(c) Understand the importance of school and community awareness.

NAC 389.XXX Agricultural mechanical engineering technology structural systems (NRS 385.080, 385.110) A course of study in agricultural mechanical engineering technology must be designed so that pupils meet the following performance standards by the completion of the final course of instruction:
1. For the area of general shop safety:
(a) Understand personal and group safety
2. For the area of welding:
(a) Demonstrate safe and proper techniques in Oxy-fuel welding (OFW);
(b) Demonstrate safe and proper techniques in Shielded Metal Arc Welding (SMAW)
3. or the area of electricity:
(a) Understand principles and theories of electricity;
(b) Apply the principles and theories of electrical circuits.
4. For the area of agricultural water and wastewater management in an agricultural and industrial settings,
(a) Demonstrate safe practices and procedures in agricultural and industrial water management;
5. For the area of agricultural construction:
(a) Demonstrate practices, applications and procedures with the use of concrete in agricultural construction;
(b) Demonstrate practices, applications, and procedures of fencing in agricultural construction;

(c) Demonstrate practices, applications and procedures of drafting in agricultural construction;
(d) Demonstrate practices, applications and procedures associated with the construction of agricultural buildings;
(e) Understand applications of copper pipe
(f) Understand applications of plastic pipe
(g) Understand surveying techniques
6. For the area of applications of single and multiple cylinder engines:
(a) Demonstrate safe practices and procedures associated with the operation, maintenance and repair of small gas engines and equipment;
(b) Demonstrate a working knowledge of essential engine operating systems;
(c) Recognize appropriate power attachments and their applications
7. For the area of operation, maintenance and repair of agricultural machinery:
(a) Demonstrate safe practices and procedures of operation, maintenance, and repair of agricultural machinery and equipment
8. For the area of hand and power tools:
(a) Identify general shop hand and power tools;
(b) Demonstrate appropriate procedures for the maintenance and repair of hand tools.
9. For the area of supervised agricultural experience:
(a) Actively develop and participate in SAE, which enables students to obtain work-based skills.
10. For the area of leadership training through membership FFA:
(a) Recognize the traits of effective leaders and participate in leadership training through involvement in FFA.
(b) Understand the opportunities in FFA;
(c) Understand the importance of school and community awareness.;