



# **Agricultural Mechanics CDE**

## **Purpose**

The purpose of the Agricultural Mechanics Career Development Event is to stimulate interest, encourage proficiency development, and recognize excellence of students using skills in agricultural mechanics. The main focus of this career development event is the current curriculum being offered in North Carolina. Students demonstrate their problem-solving skills as well as their hands-on performance in the event areas.

## **Sponsor**

Mr. Kevin Franklin currently sponsors this event in honor of Mr. Tom Bowman.

## **State Event Superintendent**

The superintendent for this event is Mr. Andy VonCanon, Western Region Agricultural Education Coordinator, Mountain Horticulture Crops Research and Extension Center, 455 Research Drive, Mills River, NC 28759, Phone: 828-553-6296 Fax: 828-684-8715 Email: andy\_voncanon@ncsu.edu

## **Eligibility**

The event is open to all FFA chapters and FFA members in good standing. FFA members may not participate in a Career Development Event that leads to a state level event after July 1, following their high school/early college graduation. Members winning a previous state event in this area or that have participated in a previous national event in this area are ineligible.

**Teams shall consist of three or four members. Four scores will count towards the team total (a three-member team will earn a zero for the 4<sup>th</sup> score).** No alternatives are allowed in state events. Any alternate found participating in a state event will result in total team disqualification.

FFA members in good standing may also participate as individuals in this event. A chapter advancing through the regional event may have up to two members participate as individuals as long as the chapter does not have a team participating in the event. Their scores will only count toward individual recognition and will not be tallied as a team score.

The top three individuals in the regional event are eligible to participate in the state event as individuals regardless of their team placing.



The use or possession of cell phones, personal digital assistants (PDAs), or any other mobile electronic communication device is prohibited during any state-level career development event. Any violation of this rule by any team member will result in total team disqualification.

FFA members participating in career development events that require the use of calculators may only use non-programmable/graphing calculators that do not have the ability to communicate with other calculators. Calculators will be screened prior to the start of a career development event for acceptability. Students caught using data stored on a calculator or communicating with other calculators will result in a total team disqualification for the event.

Any member found cheating in any state-level career development event will result in total team disqualification for the event.

The North Carolina FFA Association, in keeping with the FFA mission and purpose, does not permit the use of tobacco products, e-cigarettes, vapes, or Juuls at any FFA facility or at any FFA activity.

At the North Carolina FFA State Convention, participation in more than one FFA career development event is permitted as long as events are not being held concurrently and no special provisions are required to facilitate participation with the exception that parliamentary procedure and public speaking, and parliamentary procedure and creed speaking, which are held concurrently will allow dual participation and special provisions for flighting.

### **Dress Code**

Participants are required to follow the North Carolina FFA Career Development Event Dress Code. For this event, all participants should wear appropriate clothing that includes closed-toe shoes and provide their own industrial-quality eye protection.

The North Carolina FFA Association strives to promote a positive image at all official FFA events. The dress code policy was established to address the issue of appropriate attire at all official FFA events. Members should adhere to this policy for all events. A ten percent reduction will be applied to all individual scores from a chapter if a participant from that chapter violates the dress code during that career development event.

### **State Career Development Event Participation**

The appropriate numbers of teams based on event participation from each region along with the top three scoring individuals regardless of their team placing are eligible to compete in the state career development event. Teams and individuals advancing to state event participation must be certified by the regional FFA advisor.



## Procedures for Administering the Event

Personal safety equipment conducive to the work to be performed is to be provided by the participant. This includes appropriate footwear, gloves, long sleeves and long pants, and eye protection such as safety glasses and/or goggles. Some activities may also require hearing protectors, welding helmets, and other apparel such as aprons.

The event is divided into three phases:

### 1. Written Examination (50 points – 1 point per question)

Each participant will complete a fifty-question, four-item multiple-choice examination.

**Questions will come from the bank of questions at the end of the chapters included within the text and references listed at the end of this guide.** Participants are allowed a maximum of forty-five (45) minutes to complete the examination.

### 2. Problem Solving (60 points – 3 points per problem)

Each participant will complete twenty problem-solving activities **based on problem examples found in the text and references listed at the end of this guide.** A problem-solving activity for example might be to look up specific data from an operator's manual to solve a problem stated in written form. These activities will be set up on a four-item multiple choice basis. Each participant will have a maximum of forty-five (45) minutes in which to complete the problem-solving activities.

### 3. Performance Skills (75 points – 25 points per skill)

Each participant will complete **three hands-on** performance skill activities **from the list of performance skills developed for agricultural mechanics included at the end of this guide. Each participant will have a maximum of 45 minutes for the performance skill phase or 15 minutes for each skill.** Performance skills in the state event will be based on the agricultural mechanics curriculum. Skills can be found at <https://ncffa.org/ncffa-more/cdes/>.

All consumable supplies will be provided for each participant's use. Equipment will be in good working order and of sufficient quantities to allow the event to proceed smoothly.

## Scoring

<i>Maximum Score</i>	185
Written Exam	50
Problem Solving	60
Performance Skills	75



## **Procedure for Determining the State Event Winner When Scores are Tied**

In the event a tie score exists, apply the following methods in sequential order until the tie is broken:

1. Compare the fourth scores. The lowest team member score is the fourth score. The highest fourth score will be the winner.
2. Compare the total team scores for the problem-solving component and the higher scoring team is the winner.
3. Compare the total team scores for the written test component and the higher scoring team is the winner.
4. If these methods fail to break the tie, co-winners will be declared and a run-off event will be held to determine which team will represent North Carolina at the National FFA Convention. The run-off event will follow the same rules as the state event.

## **Procedure for Determining the Event High Scorer When Scores are tied for Individual Participants**

In the event a tie score exists, apply the following methods in sequential order until the tie is broken.

1. Compare the individual scores on the problem-solving component and the high scoring individual is the winner.
2. Compare the individual score on the written test and the high scoring individual is the winner.
3. If a tie still exists for individuals, co-high scorers will be declared and all tied individuals will be recognized.

## **State Awards**

The awards for the state event will be presented annually at the state FFA convention to include a team 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place plaque and a monetary award for travel. The high scoring individual will also receive a plaque.

## **National Career Development Event Participation**

State winning teams advancing to the national career development event will be automatically registered. It is the responsibility of the FFA chapter advisor to complete all necessary national certification and waiver forms and return them to the state FFA coordinator by the assigned due date.

State winning CDE teams that choose not to participate at the national level should contact the state office by September 1<sup>st</sup> prior to national convention. Teams that fail to inform the state office prior to September 1<sup>st</sup> will be ineligible to participate in that same CDE for the



next year (chapters may appeal to the State FFA Board of Directors). Teams that do not compete at the National Convention will be required to pay back the travel award.

## **Bibliography**

Selected references are:

Herren, Ray, *Agricultural Mechanics Fundamentals and Applications*. New York: Delmar Cengage Learning, **latest available edition**.

Herren, Ray, *Agricultural Mechanics Fundamentals and Applications: Instructors Guide*. New York: Delmar Cengage Learning, **latest available edition**.

Jeffus, Larry, *Metal Fabrication Technology for Agriculture*. New York: Delmar Cengage Learning, **latest available edition**.

Koloski, Donald R. and Radcliff, R. Bruce, *Small Engine and Equipment Maintenance*. Illinois: American Technical Publishers., **latest available edition**

## **Practicums**

Practicum guides and rubrics are located on the NCCFA Website.

### Welding Practicums

- Make a Butt Joint Weld in the Flat Position
- Make a T fillet Weld in the Flat Position
- Make an Outside Corner Joint Weld
- Make a Vertical-Up Butt Joint Weld
- Make a Lap Joint Fillet Weld in the Flat Position

\*All five weld joints can be MIG or STICK and use 7018 rods at the state competition.

### Wiring Practicums

- 8.0 Wire a light fixture controlled by a single-pole switch in the middle of a run with the power coming to the light fixture first before proceeding to a duplex receptacle that will remain hot at all times.
- 9.0 Wire a light fixture controlled by a single-pole switch with the power being first supplied to the single-pole switch. The student will include a duplex receptacle beyond the light fixture which is to remain hot at all times.
- 10.0 Wire a light fixture controlled by three-way switches when the power is first supplied to one of the switches and with the light located between the switches.



- 11.0 Wire a GFCI receptacle with multiple-location protection.
- 12.0 Wire a 240-volt welder plug and receptacle after selecting proper gauge wire from scenario and chart.

#### Other Practicums

- 2.0 Sweating a Piece of Copper Pipe into a Fitting.
- 3.0 Use proper tools to properly adjust the valves on an OHV small engine.
- 4.0 Use a small engine with head removed to inspect and record piston damage and perform cylinder and piston ring measurements.
- 5.0 Determine difference in elevation between two points and the distance from the rods to the transit.
- 6.0 Construct a frame according to specified dimension using designated fasteners.
- 7.0 Properly light, adjust, use and shut down the oxy-fuel system to cut steel plate.
- 13.0 Use multimeter to perform various skills.
- 14.0 Use Tap and Die and Chart to select proper tap, die and perform skill.