

AGRICULTURAL TECHNOLOGY AND MECHANICAL SYSTEMS

3-4 Member Team

IMPORTANT NOTE

Please thoroughly read the General CDE Rules Section at the beginning of this handbook for complete rules and procedures that are relevant to State FFA Career Development Events.

I. PURPOSE

The Oklahoma State Agricultural Technology and Mechanical Systems Career Development Event (CDE) shall reflect the agricultural mechanics instruction provided to contestants in Oklahoma secondary agricultural education departments. The written exam, skills activities, tool identification, and team activity will assess the contestant's knowledge of agricultural mechanics competencies.

II. CONTENT

- A. The Agricultural Technology and Mechanical Systems interscholastic contest is one event. It can include components of the following contest from previous years: Ag shop, Electricity, and Soil and Water Conservation.
- B. The written test can contain anything that is in the reference material.
- C. The team activity will be the theme chosen for that year.
- D. The skill activities will be chosen from the list that is provided in this document.

III. EVENT RULES

- A. Schools may register one (1) team consisting of 3 to 4 members for the contest. Members of the teams will also compete for individual awards.
- B. For a four-member team, the team score will be determined from the best 3 individual scores of the team members.
- C. The teams will be informed of the location of the event at check in. It is the student/school's responsibility to ensure they are at the proper location at the appropriate time.
 - 1. No cell phones are allowed in the contest. If a cell phone is identified, the individual is disqualified from the contest.
 - 2. Agricultural education teachers are required to sign a form stating they have trained the individuals or teams members in safety before the participants are allowed to compete.
 - 3. Any participant that is deemed unsafe either to themselves or to the other contestants will be disqualified from the contest and their school cannot participate in the contest the following year.

IV. EVENT FORMAT

- A. Theme for Team Activity
 - 1. The 2026 Oklahoma Agricultural Technology and Mechanical Systems CDE will focus on Metal Fabrication and Construction.
- NOTE.* The winner of the State Agricultural Technology and Mechanical Systems contest will have the opportunity to represent Oklahoma at the national CDE event. The National FFA Agricultural Technology and Mechanical Systems Career Development Event is divided into five (5) main areas. Each area includes competencies common to agriculture. The 2026 national contest will include

disciplines from all five competency areas in the team event. These areas can be found on the national FFA website at:

<https://ffa.app.box.com/s/s2hy37znu69xwns788799w38kctwxqdc>

B. Team Make-Up

Teams shall consist of three or four members.

C. Equipment Needed - Materials Students Must Provide

Each event participant must adhere to the safe practices and work habits appropriate when performing required activities. Participants are responsible and must provide all personal safety equipment including:

1. Industrial-quality eye protection

- a. Individuals must wear Style B (see below) industrial-quality eye protection during the team activity and the skill/problem solving activities.
- b. Those with prescription eyewear that is not Style B must also wear safety glasses or goggles while participating in this event.
- c. Safety glasses do not have to be worn while completing the written exam.
- d. Acceptable spectacles or goggles must adhere to the American National Standard Practice for Occupational and Education Eye and Face Protection, Z87.1-1979 (or Z87.1-1968) and revisions approved by ANSI. Descriptions of style A, B, and C Industrial Quality Eye Protection are as follows: Style A. NOT ACCEPTABLE for use in the event. These are safety spectacles without side shields. They are for limited-hazard use requiring only frontal protection. The addition of accessory side shields that are not firmly secured does not upgrade style A to a style B or C. Style B. Safety spectacles with wire mesh, perforated plastic, or non-perforated side shields. The side shields shall be tapered, with an anatomical periphery extending at least halfway around the circumference of the lens frame.
- e. Industrial-quality eye protection for those not wearing prescription glasses shall be style B. Style C. NOT ACCEPTABLE for use in the event. Safety spectacles with semi- or flat-fold shields that must be firmly secured to the frame. Style C glasses do not provide maximum protection from the top and bottom angles.

2. Clothing

Each individual shall furnish and wear appropriate clothing such as long pants and long-sleeved cotton shirt, coveralls, etc. for this event. Clothing must be in good repair and fit properly. Oversized or loose-fitting clothing is dangerous around agricultural equipment and is not allowed. Long-sleeves must be worn when welding or oxy-fuel cutting.

3. Other Materials

Each participant must have two sharpened No. 2 pencils and an electronic calculator. Calculators used in this event should be battery operated and silent. Graphing calculators will be provided when necessary. Each participant must also provide an original Ag Sales/FB Mgmt./Ag Mech scan sheet (available on judgingcard.com). All other written materials will be furnished for the career development event.

4. Specialized Safety Equipment

- a. Necessary equipment such as welding helmets, shields, gloves, welding leathers, hearing protection devices, etc., will be provided by the student.
- b. Additional tools and/or equipment are allowed to be used during the team

activity but must be provided by the participating teams. Additional tools and/or equipment should be cleared with the contest superintendent prior to the contest.

- c. Individuals/teams are allowed to use only the welding machines and cutting torches furnished by the state event committee.

NOTE. If any team member needs modified equipment due to physical size and stature, the student must supply this equipment. The team member or coach must present the student supplied equipment to the event superintendent prior to the start of the event for approval. Team members who need specialized or modified equipment due to disability as defined by the American Disabilities Act must submit the appropriate special needs request form and documentation with the team's certification form.

V. **EVENT SCHEDULE**

- A. All components of the contest will be administered on Saturday, April 25.
- B. Teams should be checked in at the BAE Lab by 7:30 am to ensure the contest begins promptly at 8:00 am.
- C. Each contestant shall complete individual components of the contest in the time allotted.
- D. Each individual team member can earn a total of 250 points during the morning preliminary round of the contest (written exam – 100 pts., tool ID – 50 pts., individual skill activity – 100 pts.). The top three (3) individual scores will be counted to determine the team score.
- E. All teams will be divided into two groups.
 - 1. Contestants A & C will group together and will rotate as follows:
 - a. 8:00 am – 9:00 am, written exam
 - b. 9:00 am – 9:10 am, break
 - c. 9:10 am – 9:40 am, tool ID
 - d. 9:40 am – 10:00 am, break and transition
 - e. 10:00 am – 10:30 am, individual skills activity
 - 2. Contestants B & D will group together and will rotate as follows:
 - a. 8:00 am – 8:30 am, individual skills activity
 - b. 8:30 am – 8:50 am, break and transition
 - c. 8:50 am – 9:50 am, written exam
 - d. 9:50 am – 10:00 am, break
 - e. 10:00 am – 10:30 am, tool ID
- F. Lunch will be provided for all contestants and advisors!
 - 1. Lunch will be served at the BAE Lab from 11:00 am – noon.
 - 2. The top five (5) teams advancing to the team activity will be announced during lunch.
- G. The afternoon team activity will begin promptly at noon!
- H. The Team activity will consist of the theme for that given year (identified in Section IV above). The students are expected to work safely together. They will be scored on their teamwork, problem solving skills and the quality of the product they produce.
- I. The blueprints and procedures to produce the final product to be graded will be given to the top 5 teams before they begin the team part of the contest.
- J. Teams will have three (3) hours to complete the team activity.

VI. SKILLS ACTIVITIES

The four (4) skills activities will be chosen from the following list of skills

A. Electrical Systems Competencies

1. Interpret wiring diagrams/schematics to construct controlled circuits.
2. Select appropriate wire sizes and protective devices for specific loads and length of circuits.
3. Install service entrance for single phase 120 service.
4. Complete single duplex, switched, 3-way and GFCI controlled 120V circuits.

B. Environmental and Natural Resource Systems Competencies

1. Interpret legal land descriptions and determine land area.
2. Lay out grade stakes for cut/fills.
3. Identify environmental problems in livestock & crop handling and processing buildings.
4. Calculate soil loss using universal equations and determine effects of the components of the equation.
5. Conduct land surveying practices.
 - a. Differential Leveling
 - b. Abney Hand Leveling
 - c. Pacing

C. Structural Systems Competencies

1. Select, plan, and calculate concrete construction.
2. Cut and assemble plastic pipe, including irrigation components.
3. Operate power tools for wood working applications.
 - a. Saws, drills, etc.
2. Operate non-power hand tools.
 - a. Saws, files, etc.
3. Perform basic wood framing principles.
 - a. Walls, headers, rafters, floors

D. Metal Fabrication and Construction Systems Competencies

1. Operate welding equipment and accessories for metal joining operations.
2. Cut metal with plasma cutting unit.
3. Operate and perform cuts using an Oxy/Fuel cutting system according to AWS and Victor Standards.
4. Read metal-working plans and prints (with or without welding symbols).
5. Test weld quality.

VII. TOOL ID

- A. Participant will be expected to identify tools used within the shop setting.

VIII. SCORING

Written Exam	100
Skills Activity	100
Tool Identification	<u>50</u>
Total Individual Points	250
Team Score (Count three scores)	750
Team Activity (25% of total team score)	<u>250</u>
Total Team Score	1000

IX. TIEBREAKERS

- A. Once all points are tallied, if a tie for the **team score** exists, the team with the highest 4th team member's score will be determined as the winner.
1. If still tied, the team with the highest combined score (all four members) for the written exam will be determined the winner.
 2. If still tied, the team with the highest combined score (all four members) for the skills activity will be determined the winner.
 3. If still tied, the team with the highest combined score (all four members) for the tool identification will be determined the winner.
 4. If still tied, the teams will tie for the highest award.
- B. In the case of an individual tie.
1. the individual with the highest score for the **written exam** will be determined as the winner.
 2. if still tied, the individual with the highest score for the **skills activity** will be determined the winner.
 3. if still tied, the individual with the highest score for the **tool identification** will be determined the winner.
 4. if still tied, the individuals will tie for the highest award.

X. SUPPLEMENTAL MATERIALS

- Tool ID Bank
- Scansheet: CDE #105481

XI. REFERENCES

- Agricultural Career Development: Comprehensive Agricultural Mechanics (2009). CIMC Oklahoma Department of Career and Technology Education
- Oklahoma Department of Career and Technology Education. (2015). Introduction to Agricultural Power and Technology, (AG1044). Curriculum and Instructional Materials Center: Stillwater, OK
- Agricultural Safety. (2013). CIMC Oklahoma Department of Career and Technology Education.
- Herren, R. (2010). Agricultural Mechanics Fundamentals & Applications (sixth edition). Thomas Delmar Learning: Clifton Park, NY ISBN:9781435400979
- National FFA Organization. (2021). Agricultural Technology & Mechanical Systems CDE Handbook. Available at <https://www.ffa.org/participate/cdes/agricultural-technology/>