

# Illinois Association of Vocational Agriculture Teachers Agricultural Mechanics Career Development Event

## A. General Information

1. **Participation:** Each sectional chairman should submit the names of the sectional winners immediately after the event and prior to the preregistration deadline to the IAVAT Executive Director, 3221 Northfield Drive, Springfield, IL 62702.
  - a. **Team:**
    - This Career Development Event is restricted to the winning team or alternate team of each sectional Agricultural Mechanics Career Development Event, plus the first place individuals in each section who are not on the section winning team. However, no school may have more than one (1) member compete in any single phase of the Agricultural Mechanics Career Development Event.
    - Each team shall consist of five members. Each five-member team has a different participant in each of the five phases of the CDE.
    - Each section with a participating team will be required to furnish two adult helpers for the event. One would normally be the coach of the team and the other a qualified volunteer helper from the section.
    - There will be a 90-minute maximum time limit per participant for each phase of the event.
    - Teachers and helpers shall bring and wear safety glasses where designated by the superintendent.
  - b. **Individual:**
    - This Career Development Event is restricted to the first place individuals in each section who are not on the section winning team, plus the winning team or alternate team of each sectional Agricultural Mechanics Career Development Event. However, no school may have more than one (1) member compete in any single phase of the Agricultural Mechanics CDE.
    - Individuals participate for individual awards only.
2. **Placings/Scoring:** Each phase superintendent will handle the scoring of the various phases. Agriculture teachers score the exams, exercises and tests as soon as they become available.
3. **Miscellaneous:**
  - a. Participants may use non-programmable (will not store formulas), battery operated calculators if provided by the participant.
  - b. Calculators may not be shared.
5. **Additional Information:** Refer to the “Annual Information and General Rules” section for the current year for information concerning **Entry Fees, Registration** and **Location** of the event.
6. **Preregistration is required.** Watch *News & Notes* and the *AgEd Listserve* for event details and a preregistration form. Each agriculture teacher with either a participant or a team in the Agricultural Mechanics Career Development Event must submit an entry form and non-refundable registration fees in advance of the announced deadline to the IAVAT office. Preregistration forms may be downloaded at [www.aces.uiuc.edu/itcs/im](http://www.aces.uiuc.edu/itcs/im) or [www.iavat.org](http://www.iavat.org). Deadline dates for preregistration will be published by ITCS Instructional Materials in *News & Notes* and in the *IAVAT Calendar of Events*.

## B. Career Development Event Divisions

### 1. Agriculture Power Phase

The agriculture power phase will include:	<u>Scoring</u>
Safety inspection and condition of a tractor or small engine.....	25 points
Analysis of engine and performance.....	25 points
Identification of gasoline tractor parts and small engine parts and tools.....	25 points
Written examination (based on listed references).....	25 points

The following item must be furnished by the participant: (1) **Safety glasses.** These safety glasses should be marked for easy identification in case they are misplaced. Safety glasses **must be worn** during the entire Agricultural Power phase except while taking the written examination.

2. **Carpentry Phase**

The carpentry phase will include:

	<u>Scoring</u>
Identification of hardware items, such as nails, bolts, screws, hinges, nuts, & washers (Participants may use only a folding rule or flexible steel tape).....	15 points
Identification of parts of a building.....	15 points
Preparing a bill of materials (Buying list and cutting list).....	25 points
Measuring, squaring, and sawing a board.....	15 points
Marking a rafter or brace.....	15 points
Calculating a rafter problem.....	15 points

The following items must be furnished by the participant: (1) Handsaw (crosscut); (2) Carpenter’s steel square; (3) Pencil; (4) Folding rule or flexible steel tape; (5) **Two sawhorses**; (6) **Safety glasses**. All items should be marked for easy identification. Safety glasses **must be worn** during the entire Carpentry Phase except while taking the written examination.

3. **Electricity Phase**

The electricity phase will include:

	<u>Scoring</u>
Diagramming circuits.....	15 points
Wiring exercise.....	40 points
Materials identification.....	15 points
Written examination (based on listed references).....	30 points

The following items must be furnished by the participant: 1) Electricians side-cutting pliers; 2) Diagonal cutting pliers; 3) Cable rippers; 4) Electrical screwdriver; 5) Long-nose pliers; and 6) **Safety glasses**. All items should be marked for easy identification. Safety glasses **must be worn** during the entire Electricity Phase except while taking the written examination.

4. **Surveying Phase**

The surveying phase will include:

	<u>Scoring</u>
Written examination and nomenclature (based on listed references).....	25 points
Recording leveling exercise notes and computing evaluations of leveling exercise....	25 points
Interpreting leveling exercise notes.....	25 points
Land measurement exercise.....	25 points

Everything will be furnished for this phase of the event; no safety glasses will be required.

5. **Welding Phase**

The welding phase may include metal-arc welding, *metal inert-gas (MIG) welding*, oxyacetylene brazing, and oxyacetylene cutting. It may include welds in different positions, with different thickness of metal and different welding rods.

	<u>Scoring</u>
Welding exercises (including neatness and workmanship).....	80 points
Written examination (including safety) (based on listed references).....	20 points

The following **MUST** be furnished and worn by the participant in order to participate in the event: (1) **Safety glasses or goggles**; (2) Arc welding hood (helmet); (3) Welding gloves; (4) Oxyacetylene goggles; (5) Wire brush; (6) Chipping hammer; (7) Pliers or tongs to handle hot metal; (8) Suitable clothing for welding (non-insulated coveralls, leather high top shoes (**no tennis shoes or jogging shoes**)). All items should be marked for easy identification.

**NOTE:** A participant will be **disqualified immediately for laying down a lighted torch**. A participant will also be **disqualified immediately for welding without suitable eye protection**, which includes safety glasses under the welding hood. All persons in the welding area shall wear safety glasses. Superintendents may check tools, equipment and clothing at their discretion. A superintendent shall have the right to disqualify any participant for improper clothing or equipment. **No persons may enter the Welding Laboratory with matches, liquid-fuel lighters, or butane lighters in their possession.**

**C. Suggested References****1. Agriculture Power Phase:**

- a. Slide Sets and Slidefilms (including Study Guides)
  - 486-1 Small Engine Parts and Functions – Fuel-Air Induction
  - 486-2 Small Engine Parts and Functions – Compression
  - 486-3 Small Engine Parts and Functions – Ignition
  - 486-4 Small Engine Parts and Functions – Secondary Functions and Special Tools
- b. Subject Matter Units
  - U3022a Safety in the Shop
  - U3014 Small Engines – Principles of Operation, Trouble Shooting, and Tune-Up
  - U3019 Small Engines – Repair and Overhaul
  - U3020 The Two Cycle Engine
  - U3023 Micrometers and Related Measuring Tools
- c. Transparencies
  - T440 Basic Principles of Hydraulics including GT440
  - T485a Tractor Safety including GT485a
  - T489 Small Gas Engines

**2. Carpentry Phase:**

- a. Subject Matter Units
  - U3009a Using the Carpenter's Square
  - U3051a Planning a Woodworking Project
  - U3022a Safety in a Shop
  - U3055 Lumber: Grading, Selecting, Buying, etc.
- b. Transparencies
  - T422 Rafter Making including GT422
  - T423 Steel Square
  - T426 Lumber: Buying, Grading, etc. including GT426
  - T427 Planning a Woodworking Project including GT427
  - T457 Shop Tool Identification including GT457

**3. Electricity Phase:**

- a. Slide Sets and Slidefilms
  - 401.1 Basic Electrical Wiring and Diagramming, w/ Study Guide
  - 401.2 Diagramming Electrical Wiring Circuits, w/ Study Guide
  - 404c Identification of Electrical Wiring Items
  - 406 Electrical Wiring for Livestock Confinement Buildings, w/ Study Guide
- b. Subject Matter Units
  - U3003c Planning for Electrical Wiring
  - U3012a Electrical Hazards in Home, Farm and Business
  - U3016a Electrical Wiring Procedures
  - U3016b Electrical Wiring Exercises
  - U3038 Using Three Phase Electrical Power on the Farm
  - U3022a Safety in a Shop
  - U3058 Selecting Electric Motors for Use in Agriculture
  - U3059 Installing and Caring for Electric Motors in Agriculture
  - U3061 Selecting Equipment for Electrical Installations
- c. Transparencies
  - T400a Wiring Exercises including GT400a

**4. Surveying Phase**

- a. Slide Sets and Slidefilms
  - 436a                    Surveying – Using the Steel Tape
  - 437a                    Recording Field Notes for Surveying
  - 438a                    Using the Level in Farm Surveying
  - 439a                    Staking Out a Building Site Using the Convertible Level
- b. Subject Matter Units
  - U2042                  Land Surveys and Descriptions
  - Q2042                  Test Questions
  - K2042                  Answers to Q2042
  - U3010b                Agricultural Surveying

**5. Welding Phase**

- a. Slide Sets and Slidefilms
  - 450                    Arc Welding – Process, Equipment, and Safety
  - 451                    Arc Welding – Flat Position Welding
  - 452                    Arc Welding – Vertical, Horizontal and Overhead Welding
- b. Subject Matter Units
  - U3001a                Oxyacetylene Welding and Cutting
  - U3004a                Shielded Metal-Arc Welding
  - U3022a                Safety in the Shop
  - U3036                Tungsten Inert Gas (TIG) Welding
  - U3037                Metal Inert Gas (MIG) Welding
  - U3041                Ferrous Metals – Properties, Identification and Treatment

**6. General Agricultural Mechanics References**

- a. Subject Matter Units
  - U3022a                Safety in the Shop
  - Q3022                Student Safety Tests
  - K3022                Student Safety Tests – Instructor’s Key
- b. Other Materials
  - MZ490                Charts on Safety Rules
  - DT422                Rafter Marking
  - DT423a               The Steel Square
  - DT400a               Electrical Wiring Diagramming – Steps and Examples
  - MDS 300              Electrical Wiring Hardware Identification
  - MDS 340              Hand Tool Identification
  - MDS 320              Hardware and Fastener Identification
  - Any Small Engine Manual

Catalog of instructional materials is available from ITCS Instructional Materials, University of Illinois at Urbana-Champaign, 1401 S. Maryland Dr., Urbana, IL 61801. (800) 345-6087 FAX (217) 333-3917 or available on the World Wide Web (<http://www.aces.uiuc.edu/itcs/im/>).