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 Listserv 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 or 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:
   - 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:

- 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:

- 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:

- 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.

- 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/).