

**Ag Mechanics CDE**  
**Sunday, April 28<sup>th</sup>, 2024**  
**Wamego High School**  
**Check-In: 2:30-3:30 PM**  
**Event Time: 3:00-7:00 PM**  
**Coordinator: John Bergin, john.bergin@case4learning.org**  
**Last Update: January 12<sup>th</sup>, 2024**

### **Safety**

- By registering students in this event, you, as an instructor, verify that they have passed a local safety examination during the 2023-24 school year. Students not locally certified for shop safety **should not participate** in this CDE.
- **Student attire:** Closed-toed shoes or boots, long pants, and a long shirt or welding jacket
- **Safety glasses:** Students not wearing safety glasses and PPE during practicums will receive zeros.

### **General Information**

#### *Team Information*

- 4 team members, all scores count
- Team activity only counts the **team** score
- Students can have cell phones with them – but they should not be out at any time.
- Scantron: [Apperson 28040](#) (test and BOM only)
- Team numbers: Assigned **old school** method – not related to Judging Card

#### *Attire*

- Safety glasses
- Attire: Closed-toed shoes or boots, long pants, and a long shirt or welding jacket

#### *Required Materials (per participant)*

- Clipboard
- Pencils
- Calculator, non-programmable
- Welding gloves
- Tape measure
- Stopwatch (no phone)

#### *Provided Materials*

- Welding helmet (can bring your own if desired)
- Digital multimeters at applicable stations (Thank you, SurePoint)
- Diagnostic tools at team practicum event
- Liquid measuring cups at ENR practicum

## **Team Practicum (Compact Equipment) – 200 points**

*Practicum Coordinator: TBA*

- Students work as a team to inspect a faulted Briggs and Stratton 950 Series OHV Engine (Model: 13032G-0022-F1). A customer complaint is provided with each engine. The team uses provided diagnostic tools and a repair manual to inspect the engine and complete the following in a written work/repair order:
  - Record key information about the engine and customer (Name, Date, Equipment, Model Number)
  - Verify the customer complaint
  - Identify the root cause
  - Identify key parts for correction
  - List suggested corrections
- Work/repair orders are evaluated for correct information and good technical writing. (Fluff is not technical)
- Judges assess students for safety and use of a technical manual. (50 points). The work/repair order is worth 150 points.

## **Individual Practicums**

*Written Examination (100 points)*

- 25 questions (multiple choice)
- Five questions from each event area, plus five questions from general shop safety
- Students need a non-programmable calculator
- Unit conversions provided

*Structures (100 points)*

*Practicum Coordinator: Mike Womochil Jr, Matheson Gas*

- GMAW welding
  - Demonstrate skills to produce a product in specs with a CAD drawing.
  - The drawing includes welding symbols. Students should know welding symbols for success.
- Bill of Materials (BOM)
  - Calculate the cost of a welding project (drawing and prices provided)

*Electrical (100 points)*

*Practicum Coordinator: Bo Dowding, SurePoint Ag*

- 10 DMM readings on electrical components from ag equipment – DC based on voltage, resistance, and continuity.
- [DMM provided by SurePoint](#)
- Problem-solving questions. Read two problem scenarios and refer to a manual to identify the problem. Problems relate to electrical readings in ag equipment.

*Environmental and Natural Resources (100 points)*

*Practicum Coordinator: TBA*

- Sprayer calculations
  - Calculate flowrate on a [sprayer](#) (using a smaller sprayer for consistency between nozzles)
  - Select tips and speeds for the sprayer using manual and scenario
  - Calculate pesticide mixtures using a scenario and pesticide label (will not mix –only calculate)

**Resources**

- Agricultural Mechanics Fundamentals and Applications, 7<sup>th</sup> Edition
- How to Read Shop Drawings, Lincoln Electric
- [Fluke Digital Multimeter Basics Online Course](#)

**Tiebreakers**

- Team—Ties will be broken in this order:
  1. Team event score
  2. Team test score
  3. Team metal fabrication score
  4. Highest individual drop score
- Individual— Ties will be broken in this order:
  1. Individual test score
  2. Highest practicum score (from all four areas)
  3. Individual welding score