

WELDING

CAREER DEVELOPMENT EVENT

I. PURPOSE

To assist students to gain an understanding and application of the welding process according to classroom and industry standards.

II. OBJECTIVES

1. Learn and explore career opportunities in the welding industry.
2. Learn and utilize safety practices in the welding industry.
3. Students will test their competencies with various welding practices
4. Students will be able to take classroom skills learned and apply them in a competitive event
5. Students will be able to test their analytical skills through an exam.
6. Students will demonstrate their skills in setting up and using industry standard equipment.
7. Students will work cooperatively in a team environment.

III. EVENT RULES

The event will consist of two divisions. The advanced division will consist of juniors and/or seniors. The beginner division will consist of freshman and/or sophomores.

A chapter may bring up to four students. They may bring two in the advanced division and two in the beginner division.

Students must wear proper welding attire including coveralls or welding wear, boots, gloves, safety glasses and welding helmet. They must also provide their own tools including tongs, wire brush, chipping hammer and steel ruler. They must also bring a clipboard, calculator and pencil.

Qualified judges from the classroom and industry will be used to evaluate the welds and the safety standards during the event.

IV. EVENT FORMAT

A. DESCRIPTION OF EVENT

Students will work individually in the Welding Practicum and the Written Exam and will work with their division teammate in the problem solving category.

B. ADVANCED DIVISION FORMAT

Welding Practicum

Welding Practicum will consist of the following welds using either 6013 or 6011 welding rods:

- Arc Welds consisting of a butt weld(tested for bend strength), lap weld and vertical stringer
- Mig Welds consisting of an up and down Vertical T and one-pass pipe to plate (Welds must be indented approximately one inch from beginning and end)

Welding Exam

A 50 question multiple choice welding exam will be given to each individual.

Team Problem Solving

In the practicum, the students will be given a scenario to solve. Examples could include but are not limited to the following:

Spray equipment: Students are to build a saddle tank mount for a tractor using certain metals and electrodes. They are to make a design, bill of materials, and cost estimate for the saddle tank mount.

Tillage Equipment: Students will be given a piece of equipment that is broken and they are to design the repair parts for the equipment. They will provide a materials list and cost estimate for doing the repair.

Planting Equipment: Students will be given a piece of equipment that is needing to have the worn parts hard-surfaced and built backup. They will need to provide cost estimates and what electrodes would need to be used as well as estimate the number of electrodes it would take to fix the planting equipment.

Grain Handling Equipment: Same type of problem that the other areas have had.

C. BEGINNER DIVISION FORMAT

Welding Practicum

Welding Practicum will consist of the following welds using 6013 welding rods:

- Arc welds consisting of a butt weld, lap weld, vertical stringer up and t-weld (Welds must be indented approximately one inch from beginning and end)

Welding Exam

A 50 question multiple choice welding exam will be given to each individual.

Team Problem Solving

In the practicum, the students will be given a scenario to solve. Examples could include but are not limited to the following:

Spray equipment: Students are to build a saddle tank mount for a tractor using certain metals and electrodes. They are to make a design, bill of materials, and cost estimate for the saddle tank mount.

Tillage Equipment: Students will be given a piece of equipment that is broken and they are to design the repair parts for the equipment. They will provide a materials list and cost estimate for doing the repair.

Planting Equipment: Students will be given a piece of equipment that is needing to have the worn parts hard-surfaced and built backup. They will need to provide cost estimates and what electrodes would need to be used as well as estimate the number of electrodes it would take to fix the planting equipment.

Grain Handling Equipment: Same type of problem that the other areas have had.

V. EQUIPMENT

Coupons will be standard as designated by Indiana FFA Executive Director.

VI. Awards

Awards will be given to the following:

- Top Individual – (one in each grade level)
- Top Advanced Team
- Top Beginning Team

VII. Resources

Mechanics in Agriculture, Interstate, 4th Edition

VIII. Event Scorecards

Advanced Division

Contestant Number _____

		Points Possible	Length	Undercut	Overlap	Appearance	Total	
I.	Arc Butt Weld	10 points/blank	_____	_____	_____	_____	_____	
II.	Arc Lap Weld	10 points/blank	_____	_____	_____	_____	_____	
III.	Arc Vertical Stinger Up	10 points/blank	_____	_____	_____	_____	_____	
IV.	Mig Pipe to Plate	10 points/blank	_____	_____	_____	_____	_____	
V.	Mig Vertical T Up/Down	10 points/blank	_____	_____	_____	_____	_____	
		<u>Possible</u>						<u>Score</u>
V.	Break of Butt Weld	2 pts/PSI						_____
		<u>Possible</u>						<u>Score</u>
VI.	Safety							
	1. Glasses	5						_____
	2. Clothing	5						_____
	3. Chipping	5						_____
	4. Flash Safety	5						_____
	5. General Safety	5						_____
		Safety Total						_____
		<u>Possible</u>						<u>Score</u>
VII.	Written Exam	50						_____
VIII.	Team Event	50						_____

Grand Total Score _____

Beginner Division

Contestant Number _____

		Points Possible	Length	Undercut	Overlap	Appearance	Total	
I.	Butt Weld	10 points/blank	_____	_____	_____	_____	_____	
II.	Lap Weld	10 points/blank	_____	_____	_____	_____	_____	
III.	Fillet Weld	10 points/blank	_____	_____	_____	_____	_____	
IV.	Vertical Stinger Up	10 points/blank	_____	_____	_____	_____	_____	
		<u>Possible</u>						<u>Score</u>
V.	Break of Butt Weld	2 pts/PSI						_____
		<u>Possible</u>						<u>Score</u>
VI.	Safety							
	1. Glasses	5						_____
	2. Clothing	5						_____
	3. Chipping	5						_____
	4. Flash Safety	5						_____
	5. General Safety	5						_____
		Safety Total						_____
		<u>Possible</u>						<u>Score</u>
VII.	Written Exam	50						_____
VIII.	Team Event	50						_____

Grand Total Score _____