


***Agricultural Technology and Mechanical Systems***

		
Maximum Number of Team Members	4	
Number of Team Members Scored	4	
Scantron	Ag Sales/Fb Mgmt./Ag Mech – CDE# 105481	
<b>Committee:</b> Shelby Adkins Craig Canterbury Brent Ebert Matt Knopp Seth Neal		

2019/2020 West Virginia Agriculture Mechanics CDE

The 2019/2020 agricultural mechanics contest at the State Agriculture Career Development As voted by teachers of WV events will be modeled closely on the National FFA ATMS CDE. For more information about national CDE: <http://faculty.missouri.edu/~schumacherl/natcon.html>

The yearly suggestions for emphasis are recommendations made by WV teachers at the summer meeting of the ATMS group at State FFA Convention. These will be revisited every year for conformation.

**MORNING SESSION- 2019 Events –This will be a written test for qualification to the afternoon hands-on section. Students will need a non-programmable calculator. No cell phones will be allowed in the contest. Anyone found using a cell phone at any time during the contest will be removed and scored at a 0 for all portions.**

<b>Written Test</b> <b>45 min</b>	The participant will complete a 25 question multiple choice test that focuses on questions from each systems area of the event. The exam has a heavy math focus. <i>Students will need a non-programmable calculator.</i>
<b>Compact equipment systems</b> <b>45 min</b> Identification of parts and tools will be contained in this system <b>Four stroke</b> 2019 – Rotor tiller 2021- Lawn mower 2023- Log splitter <b>Two Stroke</b> 2020- Chain saw 2022- Edger 2024- String trimmer.	The participant will complete a 25 question multiple choice test that focuses on compact equipment. Compact equipment is defined as being 30 horsepower or less. Interpreting horsepower, torque and other power measurement criteria. Comparing costs of alternative machine uses. Properly troubleshooting a compact engine to determine the cause of a failure. Select and use engine overhaul equipment pertaining to: Ignition, Cylinder, and Piston tools. Service and maintain compression system, ignition systems, and cooling and lubrication systems

## 2019/2020 Career Development Event Rules and

**AFTERNOON SESSION 2019/ 2020 Events (Top 50% of Teams, maximum 10 teams)**  
**Participation will be announced at 2 pm outside the Ag Anex building. Teams must be present with gear to compete. Any team not present will forfeit and the next team will be called in.**

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<b>Machinery and Equipment Systems</b> <b>15 minutes</b> 2019- Compact utility tractor 2020- Square bailer 2021- Skid Steer 2022- Hay Mower 2023- Manure Spreader 2024- Grain Drill 2025- Sprayer, Boom type	The student is required to identify parts, pieces, and or usage of machinery (either in person or from photograph). The contestants will make decisions and calculations about pieces of appropriate machinery. This will consist of problem solving based on a scenario, power requirements for pumps and pressures, HP requirements for PTO driven equipment, identification of parts, repair, maintenance, processing, materials handling, adjustments, reading manuals, specs, and test results.
<b>Electrical Systems</b> <b>15 minutes</b> 2019- DC electric motors 2020- AC 120 lighting Circuits 2021-Solar 2022- DC Control circuits 2023-AC load and distribution 2024- DC low voltage	<u>Students will be required to provide his/her own personal protective safety equipment and clothing.</u> Students will need to provide their own basic measuring tools and protective attire from head to toe. Students must be able to read plans. Use appropriate tools safely, take measurements, calculate load, voltage, amperage, resistance, wattage,
<b>Welding</b> <b>30 minutes</b>  Even years- SMAW Odd years - GMAW	<b><u>Participants will need to provide their own protective welding attire.</u></b> Welding - May include: flat, fillet, lap, butt &/or pipe on plate, either GMAW, or SMAW Students will use one of the following; 6010, 6011, 6013, 7018 or E70S-6 electrode. Shielding gasses will be C25 if GMAW. Practice metal will be available for students to use to set his/her welder. Students will have to be able to set-up the machine. Students will be given a drawing with symbols and expected to complete the weld as drawn.
<b>Environmental</b> <b>15 Min</b> 2019 - Pesticides/herbicide application 2020- Transit levels 2021- Water pumps (wells, sump, irrigation) 2022- Topographic mapping and layout 2023- 2024-	Describing principles involved in appropriate conservation and/or land use planning; reading legal land descriptions; determining land area; determining the percent of slope or grade; measuring distances with tapes or instruments; calculating area, percentages, erosion levels, volume, etc...

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2019/2020 Career Development Event Rules and

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<b>TEAM ACTIVITY:</b>	Students will be required to provide his/her own personal
<b>1 hour</b>	<u>protective safety equipment and clothing.</u> Teams will need to
Team	provide their own basic measuring tools and protective attire.
2019- Machinery and	Student will be asked to identify the source, set up materials,
equipment	use tools to take measurements, perform necessary
2020- Electrical Systems	calculations, trouble shoot, and compose a report. Laptops
2021-Compact equipment	will not be needed.
2022-Structural systems	Team activity will be based in the section noted for that year.
2023- Environmental	
2024-Machinery and	
equipment	

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***SAFETY GLASSES ARE REQUIRED***

All team members must wear safety glasses during the team and skill events. To enter the CDE area, students must wear safety glasses.

***USE OF HAND CALCULATORS***

Each team member will need a calculator to complete the multiple-choice examination. Students will **not** be allowed to share a calculator during the examination.

2019/2020 Career Development Event Rules and

WV ATMS CDE Tool and Materials ID

<b><u>Tools for Measuring:</u></b>	Square Screwdriver	Argent Pencil
Tape Measure	Posidrive Screwdriver	Grease Pencil
Steel Ruler	Tamper Proof Screwdriver	Paint Marker
Carpenter's (Framing) Square	Hex (Allen) Key	Scratch Awl
Swanson Speed Square	Nut Driver	Compass
Try Square	Screw/Bolt Extractor	Scribe
Combination Square		Center Punch
Inside Caliper	<b><u>Tools for Impact</u></b>	Steel Stamps
Outside Caliper	Ball Peen Hammer	
Wing Divider	Curved Claw Hammer	<b><u>Tools for Welding</u></b>
Carpenter's Level	Straight Claw (Rip) Hammer	SMAW Welding Machine
Mason's Level	Sledge Hammer	GMAW Welding Machine
Torpedo Level	Blacksmith's Hammer	GTAW Welding Machine
String (Line) Level	Cross Peen Hammer	Plasma Torch
Dumpy Level	Roofing Hammer	Flux Gas Cylinder
Transit	Tack Hammer	Flux Gas Flow Meter
Plum Bob	Warrington Hammer	Flux Gas Flow Gauge
Torque Wrench	Body Hammer (& Dolly)	Electrode Holder
Plasti-Gauge	Dead-Blow Mallet	Ground Clamp
Micrometer	Soft-Faced Hammer	Wire Brush
Protractor	Rubber Mallet	Chipping Hammer
Depth Gauge	Rawhide Mallet	MIG Pliers (Welpers®)
Spark Plug Gauge	Wooden Mallet	Locking Welding Clamp
Thickness Gauge	Tire Hammer	
Feeler Gauge	Roll Pin Punch	<b><u>Tools for Oxy-Fuel</u></b>
	Prick Punch	Oxygen Cylinder
<b><u>Tools for Torque</u></b>	Nail Set	Acetylene Cylinder
Open-End Wrench	Anvil (& Hardy)	Propane Cylinder
Box-End Wrench		Torch Wrench
Combination Wrench	<b><u>Tools for Prying</u></b>	Gas Pressure Regulator
Gear Wrench	Pry Bar	Cutting Torch
Adjustable (Crescent®) Wrench	Flat Nail Bar	Welding/Brazing Torch
Monkey Wrench	Wrecking Bar	Acetylene Cutting Tip
Pipe (Stilsen) Wrench	Crow Bar	Propane Cutting Tip
Oil Filter Wrench	Cat's Paw Nail Puller	Reverse Flow Check Valve
Chain Wrench	Aligning Bar	Cylinder Cap
Strap Wrench		Friction Lighter/Striker
6 point standard sockets	Drift Punch	Torch Tip Cleaner
Deep Well Sockets	Tire Spoon	
Ratchet Handle	Cheater Bar	<b><u>Lumber/Wood</u></b>
Extension		2x4
Universal-joint	<b><u>Tools for Marking</u></b>	2x8
Break-Over Handle	Pencil	1x6
Standard (Flat) Screwdriver	Soapstone	4x4 treated
Phillips Screwdriver	Chalk-line	BC plywood
Torx® Screwdriver	Sliding T-Bevel	OSB

2019/2020 Career Development Event Rules and

<b><u>Tools for Gripping</u></b>		<b><u>Stationary Power Tools</u></b>
Slip-Joint Pliers	Jig Saw Blade	Drill Press
Lineman's Pliers	Reciprocating Saw	Bench/Pedestal Grinder
Groove Joint (Channel-Lock®) Pliers	Reciprocating Saw Blade	Table Saw
Diagonal Wire Cutting Pliers	Die Grinder	Band Saw
Bolt Cutters	Impact Driver	Scroll Saw
End Nippers	Impact Sockets	Sliding Miter Saw
Aviation Snips	Orbital Sander	Planer
Tin Snips (shears)	¼ sheet Sander	Jointer
Sheet Metal Seamer	Belt Sander	Router Table
Needle/Long Nose Pliers	Router	Wood Lathe
Lever Lock (Vise-Grip®) Pliers	Router Bits	Belt/Disc combo Sander
Snap Ring Pliers	Hydraulic Jack	Iron Worker
Hog Ring Pliers		Hydraulic Pipe Bender
J-Clip® Pliers	<b><u>Tools for Removing Material</u></b>	Hydraulic Bearing Press
Bench Vise	Rip Saw	Abrasive Cut-Off Saw
Machinist Vise	Cross-Cut Saw	Sheet Metal Brake
Mechanic's Vise	Hack Saw	Cold Saw
Pipe Vise	Key-Hole Saw	Horizontal Band saw
C-Clamp	Coping Saw	
Bar Clamp	Back (miter/dovetail) Saw	<b><u>Pneumatic Tools</u></b>
Parallel (Block) Clamp	Manual Miter Box	Air Compressor
Spring Clamp	Utility Knife	Dryer
Corner Clamp	Cold Chisel	Regulator
Flaring Tool (copper tubing)	Wood Chisel	Expansion Tank
	Slotting Chisel	Impact Driver
<b><u>Hand Electric Power Tools</u></b>	Slitting Chisel	Brad Nailer
Drill (corded or cordless)	Cape Chisel	Framing Nailer
Jacobs Chuck	Pipe/Tubing Cutter	Crown Stapler
Chuck Key	PVC Cutter	Air Hammer (& chisel)
High Speed Twist Bit	Hand Plane (bench)	Needle Scaler
Spade Bit	Hand Plane (block)	DA Sander
Countersink Bit	Rasp	Blower Nozzle
Masonry Bit	Surform® Tool	Air Chuck
Step Bit	Mill File	Quick Connectors
Hole Saw	Bastard File	Tire Pressure Gauge
Battery & Charger	Flat File	HVLP Paint Gun
Disc Grinder/Sander	Half-Round File	Paint Sprayer
Grinding Disc	Round File	
Cup Brush	Whetstone	<b><u>Tools for Electrical Work</u></b>
Sanding Disc	Tap	Wire Stripper
Spanner Wrench	Die	Cable Stripper
Circular Saw	Brace	Multi-Meter
Cross Cut Blade	Auger Bit	Voltage Detector
Plywood Blade		Soldering Iron/Gun
Multi-purpose Blade		
<b><u>Masonry/Concrete Tools</u></b>	Disposable Gloves	<b><u>Electrical Supplies</u></b>

2019/2020 Career Development Event Rules and

Brick Trowel	Gauntlet Welding Gloves	2/1 Romex® wire
Notched Trowel	Welders mittens	3/1 Romex® wire
Concrete Groover	Welder's Cap	Rigid Conduit (Galv)
Bullnose edger	Knee Pad	Rigid Conduit (PVC)
Magnesium float	Painting Coverall	Flexible Conduit
Finishing Float	Dust Mask	Junction Box
Finishing Trowel	Respirator	Handy Box
Tile Cutter	Ear Plugs	Circuit Breaker
Caulking Gun	Ear Muffs	Cable Connector
Adhesive/Thinset		Convenience Outlet
Slump cone	<b><u>Welding Supplies</u></b>	Lighting Receptacle
	E6011 Electrodes	GFCI Outlet
<b><u>Cleaning Tools</u></b>	E7018 Electrodes	SPST Switch
Parts Washing Station	E6010 Electrodes	3-Way Switch
Parts Washing Brush	E6013 Electrodes	Cover Plate
Corn head Broom	E7024 Electrodes	Wire Nut
Push Broom	ER70S6 Electrode Wire	Insulated Staples
Table Broom	Acid Core Solder	Electrical Tape
Shavings Brush	Rosin Core Solder	Shrink Wrap
Dustpan	Brazing Filler Rod w/flux	Butt connector
Shop Vacuum	Brazing Filler Rod	“Quick” splice connector
Dust mop	GTAW Filler Rods	
	GTAW Electrodes	<b><u>Fasteners</u></b>
<b><u>Personal Protective Equipment</u></b>	Borax Flux	Common Nail
Clear Safety Glasses		Galvanized Nail
Shaded Safety Glasses	<b><u>Plumbing Supplies</u></b>	Duplex Nail
Clear Safety Goggles	Galvanized Steel Pipe	Finishing Nail
Shaded Safety Goggles	Black Steel Pipe	Fence Staples
Clear Face Shield	CPVC Pipe	Wood Screw
Shaded Face Shield	PVC Pipe	Drywall screw
Welding Hood/Helmet	Copper Tubing- soft	Sheet Metal Screw
Hard Hat	Copper tubing- rigid	Machine Screw
Shop Coat	Float Valve	Hex Head Bolt
Welding Sleeve(leather)	Elbow	Carriage Bolt
Welding Sleeve (cloth)	Coupling	Hex Nut
Welding Jacket (cloth or leather)	Union	Wing Nut
Welding Cape	Reducer	Lock Washer
Welding Apron	“T” joint	Flat Washer
Driver's Gloves	Nipple	
Leather Work Gloves	Cap	
Cloth gloves	Plug	
Studded Work Gloves	45° Elbow	
Cloth Roper's Gloves	Street Elbow	
Anti-Vibration Gloves		
Mechanic's Gloves		





2019/2020 Career Development Event Rules and

Written Exam A					
1	A B C D E	21	A B C D E	41	A B C D E
2	A B C D E	22	A B C D E	42	A B C D E
3	A B C D E	23	A B C D E	43	A B C D E
4	A B C D E	24	A B C D E	44	A B C D E
5	A B C D E	25	A B C D E	45	A B C D E
6	A B C D E	26	A B C D E	46	A B C D E
7	A B C D E	27	A B C D E	47	A B C D E
8	A B C D E	28	A B C D E	48	A B C D E
9	A B C D E	29	A B C D E	49	A B C D E
10	A B C D E	30	A B C D E	50	A B C D E
11	A B C D E	31	A B C D E	51	A B C D E
12	A B C D E	32	A B C D E	52	A B C D E
13	A B C D E	33	A B C D E	53	A B C D E
14	A B C D E	34	A B C D E	54	A B C D E
15	A B C D E	35	A B C D E	55	A B C D E
16	A B C D E	36	A B C D E	56	A B C D E
17	A B C D E	37	A B C D E	57	A B C D E
18	A B C D E	38	A B C D E	58	A B C D E
19	A B C D E	39	A B C D E	59	A B C D E
20	A B C D E	40	A B C D E	60	A B C D E
61	A B C D E	81	A B C D E	62	A B C D E
63	A B C D E	83	A B C D E	64	A B C D E
65	A B C D E	85	A B C D E	66	A B C D E
67	A B C D E	87	A B C D E	68	A B C D E
69	A B C D E	89	A B C D E	70	A B C D E
71	A B C D E	91	A B C D E	72	A B C D E
73	A B C D E	93	A B C D E	74	A B C D E
75	A B C D E	95	A B C D E	76	A B C D E
77	A B C D E	97	A B C D E	78	A B C D E
79	A B C D E	99	A B C D E	80	A B C D E
82	A B C D E	84	A B C D E	86	A B C D E
88	A B C D E	90	A B C D E	92	A B C D E
94	A B C D E	96	A B C D E	100	A B C D E

Written Exam B					
1	A B C D E	21	A B C D E	41	A B C D E
2	A B C D E	22	A B C D E	42	A B C D E
3	A B C D E	23	A B C D E	43	A B C D E
4	A B C D E	24	A B C D E	44	A B C D E
5	A B C D E	25	A B C D E	45	A B C D E
6	A B C D E	26	A B C D E	46	A B C D E
7	A B C D E	27	A B C D E	47	A B C D E
8	A B C D E	28	A B C D E	48	A B C D E
9	A B C D E	29	A B C D E	49	A B C D E
10	A B C D E	30	A B C D E	50	A B C D E
11	A B C D E	31	A B C D E	51	A B C D E
12	A B C D E	32	A B C D E	52	A B C D E
13	A B C D E	33	A B C D E	53	A B C D E
14	A B C D E	34	A B C D E	54	A B C D E
15	A B C D E	35	A B C D E	55	A B C D E
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71	A B C D E	91	A B C D E	72	A B C D E
73	A B C D E	93	A B C D E	74	A B C D E
75	A B C D E	95	A B C D E	76	A B C D E
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