

# Ag Mechanics and Power Systems Program Standards Criticality Survey 2018

## CONTENT STANDARD 1.0: OCCUPATIONAL SAFETY AND HEALTH IN AG MECHANICS

### Performance Standard 1.1: Safety Practices

	Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
1.1.1	Explain the importance of safety in agricultural mechanics.	0	12	14	2.54
1.1.2	Identify and differentiate between safe and unsafe work practices.	0	6	20	2.77
1.1.3	Describe the methods utilized to implement safe work practices.	1	11	14	2.50
1.1.4	Identify and explain the purpose of signals and symbols in agricultural safety.	4	12	10	2.23
1.1.5	Explain the importance and function of safety training.	2	14	10	2.31
1.1.6	Evaluate the importance of occupational safety and health in agriculture mechanics.	3	10	13	2.38
1.1.7	Identify and explain the role that various agencies play in regulating safety.	11	12	3	1.69
1.1.8	Identify and demonstrate the proper use of personal protection equipment (PPE).	1	7	18	2.65
1.1.9	Locate and demonstrate the proper uses of the first aid and emergency equipment.	1	14	11	2.38
1.1.10	Maintain a general safe working environment.	0	9	17	2.65
1.1.11	Demonstrate the proper disposal of hazardous waste.	2	12	12	2.38
1.1.12	Read and understand safety data sheets (SDS).	6	13	7	2.04
Answered					26
Skipped					3

<b>CONTENT STANDARD 2.0: TOOLS AND HARDWARE</b>				
<b>Performance Standard 2.1: Safe and Proper Use of Tools</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
2.1.1 Determine which hand tool, power tool and measuring and marking devices are most appropriate for a job.	1	11	14	2.50
2.1.2 Identify and safely use of hand and power tools utilized in agricultural mechanics.	1	10	15	2.54
2.1.3 Identify and properly use measuring and marking tools.	2	16	7	2.20
2.1.4 Measure and apply metric to standard measurement conversions.	8	14	4	1.85
2.1.5 Inspect and maintain tools.	3	12	11	2.31
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>Performance Standard 2.2: Hardware and Fasteners</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
2.2.1 Identify and select proper common hardware and fasteners.	4	18	4	2.00
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

CONTENT STANDARD 3.0: METAL TECHNOLOGY				
Performance Standard 3.1: Welding				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
Demonstrate proper safety practices working with metal technology.	6	12	8	2.08
Determine uses of metal.	9	15	2	1.73
Identify types of metal and the proper welding technique.	12	13	1	1.58
Recognize properties of metal.	15	10	1	1.46
Properly select and use oxy-fuel equipment.	5	16	5	2.00
Properly select and use shielded metal arc welding equipment.	8	16	2	1.77
Properly select and use gas metal arc welding equipment.	8	15	3	1.81
Properly select and use gas tungsten arc welding equipment.	15	9	2	1.50
Properly select and use plasma cutting equipment.	13	11	2	1.58
Properly select welding consumables (i.e. wire, electrode, gas and filler rod).	10	14	2	1.69
Answered				26
Skipped				3

Performance Standard 3.2: Cold Metal Work				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
Read metal working plans.	17	8	1	1.38
Properly cut threads with tap and die.	7	18	1	1.77
Join metal by riveting.	15	10	0	1.40
Properly thread steel pipe.	14	11	1	1.50
Layout holes and drill holes using a twist drill.	10	16	0	1.62
Bend sheet and strap metal to angles and/or shapes.	18	8	0	1.31
Answered				26
Skipped				3

<b>CONTENT STANDARD 4.0: POWER SYSTEMS</b>				
<b>Performance Standard 4.1: Engines Technology</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
4.1.1 Identify the operating principles of internal combustion engines.	0	9	17	2.65
4.1.2 Explain the function and operating principles of the fuel, lubrication, governor, and ignition systems.	0	12	14	2.54
4.1.3 Locate technical information in electronic and print form.	1	5	20	2.73
4.1.4 Troubleshoot and maintain engines.	0	8	18	2.69
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>Performance Standard 4.2: Electric Motors</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
4.2.1 Select motors based on type of application.	10	12	4	1.77
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>Performance Standard 4.3: Agricultural Machinery</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
4.3.1 Identify and perform basic equipment maintenance on agricultural machinery.	0	10	15	2.60
4.3.2 Use mathematics to solve equipment calibration problems.	5	10	11	2.23
4.3.3 Demonstrate converting common units of measure found in agriculture.	7	10	9	2.08
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>Performance Standard 4.4: Hydraulics</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
4.4.1 Identify the parts and functions of the hydraulic systems.	0	8	18	2.69
4.4.2 Identify the applications of hydraulics in agriculture.	0	8	18	2.69
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>CONTENT STANDARD 5.0: ELECTRICITY</b>				
<b>Performance Standard 5.1: Basic Electrical Principles</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
5.1.1 Demonstrate proper safety practices when working with electricity. Define basic electrical terminology; identify and explain the basic principles of electricity.	0	9	16	2.64
5.1.2 Recognize electrical code requirements for wiring.	7	10	9	2.08
5.1.3 Plan and install an electrical circuit.	5	13	8	2.12
5.1.4 Measure electrical circuits for voltage, current flow, resistance, and wattage.	0	8	18	2.69
5.1.5 Trouble-shoot electrical circuits.	0	4	22	2.85
5.1.6 Describe the relationship of volts, amps, and ohms in terms of Ohm's Law.	2	12	12	2.38
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>CONTENT STANDARD 6.0: MATHEMATICAL APPLICATIONS</b>				
<b>Performance Standard 6.1: Mathematical Applications in Agriculture Mechanics &amp; Power Systems</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
6.1.1 Perform mathematical operations for whole numbers, fractions, decimals, ratios, percentages, and rounding (significant figures).	7	14	4	1.88
6.1.2 Demonstrate converting common units of measure found in agriculture.	8	14	4	1.85
6.1.3 Explain the meaning of accuracy verses precision.	12	11	3	1.65
6.1.4 Use mathematics to solve equipment calibration problems.	6	13	7	2.04
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>CONTENT STANDARD 7.0: INSULATION</b>				
<b>Performance Standard 7.1: Insulation</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
7.1.1 Explain the importance of insulation.	17	9	0	1.35
7.1.2 Explain the theory behind insulation.	20	6	0	1.23
7.1.3 Identify and select insulation materials.	18	7	1	1.35
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>CONTENT STANDARD 8.0: EMERGING TECHNOLOGIES</b>				
<b>Performance Standard 8.1: Emerging Technologies in Ag Systems</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
8.1.1 Identify uses of precision and emerging technology in agriculture.	3	8	14	2.44
8.1.2 Understand the potential applications of new technology in agriculture.	3	8	14	2.44
<b>Answered</b>				<b>25</b>
<b>Skipped</b>				<b>4</b>

<b>CONTENT STANDARD 9.0: CAREERS</b>				
<b>Performance Standard 9.1: Careers in Ag Mechanics</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
9.1.1 Research potential careers in ag mechanics.	6	13	7	2.04
9.1.2 Demonstrate employability skills for a career in ag mechanics industry.	3	14	9	2.23
9.1.3 Research additional industry certifications available.	7	15	4	1.88
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>CONTENT STANDARD 10.0: LEADERSHIP TRAINING THROUGH AGRICULTURAL EDUCATION</b>				
<b>Performance Standard 10.1: Effective Leadership and Leadership Training</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
10.1.1 Expand leadership experience by participating in a chapter activity.	16	9	1	1.42
10.1.2 Participate in a career development event at the local level or above.	15	10	1	1.46
10.1.3 Exhibit leadership skills by demonstrating proper parliamentary procedure.	21	4	1	1.23
10.1.4 Participate in a speech or presentation activity.	15	10	0	1.40
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

<b>Performance Standard 10.2: School and Community Awareness</b>				
<b>Answer Choices</b>	<b>Nice to Know</b>	<b>Need to Know</b>	<b>Critical to Know</b>	<b>Rating Average</b>
10.2.1 Participate in a school improvement or community development project.	17	9	0	1.35
<b>Answered</b>				<b>26</b>
<b>Skipped</b>				<b>3</b>

CONTENT STANDARD 11.0: SUPERVISED AGRICULTURAL EXPERIENCE				
Performance Standard 11.1: Maintain a Supervised Agricultural Experience				
Answer Choices	Nice to Know	Need to Know	Critical to Know	Rating Average
Accurately maintain SAE record books.	18	8	0	1.31
Investigate the proficiency award areas related to SAE program area.	20	6	0	1.23
Actively pursue necessary steps to receive higher degrees in FFA.	18	8	0	1.31
Answered				26
Skipped				3