



MOTORCYCLE SERVICE TECHNOLOGY



SkillsUSA Championships Technical Standards

PURPOSE

To evaluate each competitor's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of motorcycle service technology.

CLOTHING REQUIREMENTS

Class D: Competition Specific — Blue Attire

- Official SkillsUSA light blue work shirt
- Navy pants
- Black, brown or tan work safety shoes (with protective toe cap)

Note: Safety glasses must have side shields or goggles. (Prescription glasses may be used only if they are equipped with side shields. If not, they must be covered with goggles.)

These regulations refer to clothing items that are pictured and described at www.skillsusastore.org. If you have questions about clothing or other logo items, call 1-888-501-2183.

Note: Competitors must wear their official competition clothing to the competition orientation meeting.

ELIGIBILITY

Open to active SkillsUSA members enrolled in career and technical education programs that include motorcycle service technology as an occupational objective.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
 - a. All necessary tools, equipment, supplies and publications for the competition
2. Supplied by the competitor:
 - a. All competitors must create a one-page resume. See “Resume Requirement” below for guidelines.

RESUME REQUIREMENT

Competitors must create a one-page resume to submit online. SkillsUSA South Carolina competitors should submit their resume by the deadline published on the competition updates page of our website. Failure to submit a resume will result in a 10-point penalty.

Your resume must be saved as a PDF file type using file name format of “Last Name_First Name.” For example, “Amanda Smith” would save her resume as Smith_Amanda. If you need assistance with saving your file as a PDF, visit the Adobe website for more information.

Note: Check the Competition Guidelines and/or the updates page on the state website.

PROHIBITED DEVICES

Cellphones, electronic watches and/or other electronic devices not approved by a competition’s national technical committee are **NOT** allowed in the competition area. Please follow the guidelines in each technical standard for approved exceptions. Technical committee members may also approve exceptions onsite during the SkillsUSA Championships if deemed appropriate.

Penalties for Prohibited Devices

If a competitor’s electronic device makes noise or if the competitor is seen using it at any time during the competition, an official report will be documented for review by the Director of the SkillsUSA Championships. If confirmed that the competitor used the device in a manner which compromised the integrity of the competition, the competitor’s scores may be removed.

SCOPE OF THE COMPETITION

The competition is divided into two parts: a written exam and series of skill-related tests designed to assess skills selected from the following lists of competencies as determined by the SkillsUSA Championships technical committee.

KNOWLEDGE PERFORMANCE

The competition will include a written exam assessing knowledge of motorcycle service competencies.

SKILL PERFORMANCE

The competition will include a series of tests designed to assess skills identified by industry standards in the areas of accuracy, proper use of tools and equipment and safety practices.

COMPETITION GUIDELINES

1. Competitors will be tested on a variety of motorcycles, ATVs, scooters, and side-by-sides commonly found in the United States using both metric and American threads/wrenches.
2. Competitors will be judged on accuracy, proper use of tools and equipment, and safety practices. Scoring sheets will reflect each specific skill requirement as determined by the national technical committee.

STANDARDS AND COMPETENCIES

MST 1.0 — Implement skills and apply knowledge needed to perform general shop procedures.

- 1.1. Use the parts manual to identify part numbers of specified parts.
- 1.2. Apply the knowledge needed to use and read service manuals to find specifications and procedures.
- 1.3. Apply the knowledge to use proper techniques in the care and use of equipment.
- 1.4. Demonstrate proper safety procedures.
- 1.5. Fill out repair orders.

MST 2.0 — Apply the knowledge and skills needed to test the performance of engine/drivetrain condition in a motorcycle service situation.

- 2.1. Determine engine condition by performing a cylinder leak down and compression test.
- 2.2. Use dial bore gauges, micrometer and feeler gauges to determine the condition of cylinders, pistons, rings and other engine parts.
- 2.3. Remove, measure and reinstall clutch components.
- 2.4. Adjust valve clearance of screw-type and shim- (pad) type valves.
- 2.5. Diagnose, service and repair chain and sprocket and/or shaft-driven and/or belt type final drive systems.
- 2.6. Identify and inspect transmission components.

MST 3.0 — Implement the skills and knowledge needed to run a carburetion and fuel injection inspection in a motorcycle service situation.

- 3.1. Remove and disassemble carburetor, adjust the float, identify components and reassemble and reinstall carburetor.
- 3.2. Remove and disassemble intake runner, identify components, reassemble and reinstall.
- 3.3. Inspect, service and reinstall an oil-foam air filter.
- 3.4. Synchronize carburetors.
- 3.5. Reflash ECM/BCM.

MST 4.0 — Apply the knowledge needed and the skills required to inspect, repair and service wheels in a motorcycle service situation.

- 4.1. Inspect, repair and service tubeless tires (street and ATV type).
- 4.2. Inspect, repair and service tube tires.
- 4.3. Diagnose, service and repair disc and drum brake systems.

- 4.4. Measure radial and lateral run out of a rim using a dial indicator true spoke wheel.
- 4.5. Static balance the wheel.

MST 5.0 — Demonstrate the skills needed to perform a routine inspection and maintenance check in a motorcycle service situation.

- 5.1. Inspect, service and replace cables.
- 5.2. Inspect, service and reinstall crankcase breather.
- 5.3. Inspect fluid levels.
- 5.4. Adjust ignition timing.
- 5.5. Adjust clutch mechanisms and cable.

MST 6.0 — Apply the knowledge and the skills needed to perform an electrical inspection in a motorcycle service situation.

- 6.1. Use a multimeter to measure and diagnose resistance of specified components, amperage drain key off and on, battery voltage key off and key on, charging voltage and amperage.
- 6.2. Locate and repair other electrical problems.
- 6.3. Inspect the ignition timing.

MST 7.0 — SkillsUSA Framework

The SkillsUSA Framework is used to pinpoint the Essential Elements found in Personal Skills, Workplace Skills and Technical Skills Grounded in Academics. Students will be expected to display or explain how they used some of these Essential Elements. Please reference the graphic, as you may be scored on specific elements applied to your project. For more, visit: www.skillsusa.org/who-we-are/skillsusa-framework/.



COMMITTEE IDENTIFIED ACADEMIC SKILLS

The technical committee has identified that the following academic skills are embedded in this competition.

Math Skills

- Use fractions to solve practical problems.
- Simplify numerical expressions.
- Solve problems using proportions, formulas and functions.

Science Skills

- Use knowledge of chemical properties (acidity, basicity, combustibility and reactivity).
- Use knowledge of mechanical, chemical and electrical energy.
- Use knowledge of speed, velocity and acceleration.
- Use knowledge of Newton's laws of motion.
- Use knowledge of work, force, mechanical advantage, efficiency and power.
- Use knowledge of simple machines, compound machines, powered vehicles, rockets and restraining devices.
- Use knowledge of principles of electricity and magnetism.

- Use knowledge of static electricity, current electricity and circuits.
- Use knowledge of magnetic fields and electromagnets.
- Use knowledge of motors and generators.

Language Arts Skills

- Understand source, viewpoint and purpose of texts.
- Demonstrate knowledge of appropriate reference materials.
- Demonstrate informational writing.

CONNECTIONS TO NATIONAL STANDARDS

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- Numbers and operations
- Algebra
- Geometry
- Measurement
- Data analysis and probability
- Problem solving
- Communication
- Connections
- Representation

Source: NCTM Principles and Standards for School Mathematics. For more information, visit: <http://www.nctm.org>.

Science Standards

- Understands the structure and properties of matter.
- Understands the sources and properties of energy.
- Understands forces and motion.
- Understands the scientific enterprise.

Source: McREL compendium of national science standards. To view and search the compendium, visit: www2.mcrel.org/compendium/.

Language Arts Standards

- Students read a wide range of print and non-print texts to build an understanding of texts, of themselves and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
- Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and

their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
- Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.ncte.org/standards.