

# MOTORCYCLE SERVICE TECHNOLOGY



## PURPOSE

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

First, download and review the General Regulations at: <http://updates.skillsusa.org>.

## CLOTHING REQUIREMENTS

### Class D: Contest Specific — Blue Attire

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

These regulations refer to clothing items that are pictured and described at: [www.skillsusastore.org](http://www.skillsusastore.org). If you have questions about clothing or other logo items, call 800-401-1560 or 703-956-3723.

**Note:** Contestants must wear their official contest clothing to the contest orientation meeting.

## ELIGIBILITY

Open to active SkillsUSA members enrolled in career and technical 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 contest
2. Supplied by the contestant:
  - a. All competitors must create a one-page résumé and submit a hard copy to the technical committee chair at orientation. Failure to do so will result in a 10-point penalty.

**Note:** Your contest may also require a hard copy of your résumé as part of the actual contest. Check the Contest Guidelines and/or the updates page on the SkillsUSA website at <http://updates.skillsusa.org>.

## SCOPE OF THE CONTEST

The scope of the contest is defined by industry standards as set by the current industry technical standards. The contest 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 contest will include a written knowledge exam assessing knowledge of industry standards and competencies as identified by the technical committee.

### Skill Performance

The contest 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.

### Contest Guidelines

1. Contestants will be tested on a variety of motorcycles, ATVs and scooters commonly found in the United States using both metric and American threads/wrenches.
2. Contestants will be judged on accuracy, proper use of tools and equipment and safety practices. Rating 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/drive train 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

**Committee Identified Academic Skills**

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

**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: <http://www2.mcrel.org/compendium/browse.asp>.

#### 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](http://www.ncte.org/standards).