

MOTORCYCLE SERVICE TECHNOLOGY BLUEPRINT

This Blueprint contains the subject matter content of this Skill Connect Assessment. This Blueprint does **NOT** contain the information one would need to fully prepare for a SkillsUSA Championships contest. Please refer to the *SkillsUSA Championships Technical Standards* CD-ROM for the current year or purchase and download the relevant "Contest Singles." Both are available through www.skillsusa.org > Shop > Educational Materials Catalog.

Standards and Competencies

Implement skills and apply knowledge needed to perform general shop procedures

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

Apply the knowledge and skills needed to test the performance of engine/drive train condition in a motorcycle service situation

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

Implement the skills and knowledge needed to run a carburetion inspection in a motorcycle service situation

- Remove and disassemble carburetor, adjust the float, identify components and reassemble and reinstall carburetor
- Inspect, service and reinstall an oil-foam air filter
- Synchronize carburetors

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

- Inspect, repair and service tubeless tires (street and ATV type)
- Inspect, repair and service tube tires
- Diagnose, service and repair disc and drum brake systems
- Measure radial and lateral run out of a rim using a dial indicator true spoke wheel
- Static balance the wheel

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

- Inspect, service and replace cables
- Inspect, service and reinstall crankcase breather
- Inspect fluid levels
- Adjust ignition timing
- Adjust clutch mechanisms and cable

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

- 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
- Locate and repair other electrical problems

Apply the knowledge and the skills needed to perform a suspension inspection/repair in a motorcycle service situation

- Set up proper suspension set up for rider preference
- Perform a suspension inspection
- Demonstrate knowledge of repair and replacing a fork seal and bushings

Committee Identified Academic Skills

The SkillsUSA national technical committee has identified that the following academic skills are embedded in the motorcycle service technology training program and assessment:

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. To view high school standards, visit: standards.nctm.org/document/chapter7/index.htm. Select “Standards” from menu.

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: www.mcrel.org/standards-benchmarks/.

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.readwritethink.org/standards/index.html.