

WORLDSKILLS STANDARD SPECIFICATION

Skill 33

Automobile Technology





THE WORLDSKILLS STANDARDS SPECIFICATION (WSSS)

GENERAL NOTES ON THE WSSS

The WSSS specifies the knowledge, understanding and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSSS).

The skill competition is intended to reflect international best practice as described by the WSSS, and to the extent that it is able to. The Standards Specification is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will not be separate tests of knowledge and understanding.

The Standards Specification is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards Specification. The sum of all the percentage marks is 100.

The Marking Scheme and Test Project will assess only those skills that are set out in the Standards Specification. They will reflect the Standards Specification as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme and Test Project will follow the allocation of marks within the Standards Specification to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Standards Specification.

WORLDSKILLS STANDARDS SPECIFICATION

SECTION	RELATIVE IMPORTANCE (%)
1	20
Work organization and management	
The individual needs to know and understand: <ul style="list-style-type: none">• The purposes, uses, care, maintenance of all equipment, together with their safety implications• The purposes, uses, care and potential risks associated with materials and chemicals• The difficulties and risks associated with required activities, together with their causes and prevention of those difficulties and risks• The time available and associated with each activity• The parameters within which activities need to be scheduled• The health and safety standards applying at any one time• Environmental and safety principles and their application to good housekeeping in the work environment	



	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Prepare and maintain a safe, tidy and efficient work station • Prepare self for the tasks in hand, including full regard for health and safety • Plan, prepare and complete each task within the time available • Schedule work to maximize efficiency and avoid disruption • Select and use all equipment and materials safely and in compliance with manufacturers' instructions • Clean, store and test all equipment and materials safely and in compliance with manufacturers' instructions • Apply or exceed the health and safety standards applying to the environment, equipment and materials • Restore the work area and vehicle to an appropriate state and condition 	
2	Communication and interpersonal skills	15
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The range and purposes of documentation, including written and technical drawings including schematic and wiring diagrams, in both paper based and electronic forms • The technical language associated with the skill • The standards required for routine and exception reporting in oral, written and electronic form • The nature of the reports provided by measuring equipment and their interpretation • The required standards for customer service and care 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Read, interpret and extract technical data and instructions from workshop manuals in any available format • Communicate in the workplace by written and electronic means, using standard formats • Communicate in the workplace by oral, written and electronic means to ensure clarity, effectiveness and efficiency • Use a standard range of communication technologies • Complete reports and respond to issues and questions arising • Respond to customers' needs face to face and indirectly 	



3	Electrical and mechanical systems, and their integration	20
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The principles and characteristics of: <ul style="list-style-type: none"> • Spark ignition engine management systems • Compression ignition engine management systems • Forced induction, emission and exhaust systems • Body electrical and electronic systems • Braking and stability control systems • Suspension and steering systems • Drive line systems • HVAC systems • Air bag and safety restraint systems (SRS) • How each system is interconnected and can have an effect on other systems • How sensors and information are shared between various management systems 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Use test equipment to measure, check and diagnose management systems for mechanical and/or electronic faults • Perform tests to identify and isolate a fault 	
4	Inspection and diagnosis	25
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The correct use and interpretation of relevant measuring devices and equipment • The principles and applications of all relevant numerical and mathematical calculations • The principles and applications of advanced diagnostic procedures • The principles and applications of specialist diagnostic tooling and equipment 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Calibrate and use all measuring devices and equipment (mechanical and electrical) for diagnosis • Determine the precise location of component faults within a range of light vehicle systems • Select and apply the appropriate devices and equipment to make inspections and diagnose deficiencies and faults to: <ul style="list-style-type: none"> • Spark ignition systems • Compression ignition systems • Forced induction, emission and exhaust systems • Body electrical/electronic systems • Braking and stability control systems • Suspension and steering systems • Drive line systems • Calculate, check and interpret results as required • Review the options for repair or replacement 	



5	Repair, overhaul and service	15
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The options for repair or replacement • Repair methods/procedures, special tool requirements • effects on other vehicle systems and associated repair work 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Use manufacturers' and component suppliers' specification as required • Construct, justify and communicate appropriate proposals and decisions regarding repair or replacement • Use correct procedures for securing replacement parts • Repair vehicle electrical systems and electrical circuits, repair/overhaul charging and starting systems • Repair/overhaul hydraulic braking systems (disc and drum) and/or associated components, including hand or parking brake • Repair electronically controlled antilock brakes and stability control systems • Remove/overhaul driveline components • Repair/overhaul steering systems/components, including mechanical, electrical and hydraulic power assisted steering systems • Repair suspension systems and associated components • Carry out steering wheel alignment operations • Repair/overhaul four stroke engines and associated engine components • Repair/overhaul manual/automatic transaxles/transmissions and components • Repair diesel fuel systems including electronic compression ignition engine management systems and associated components 	
6	Hybrid and new technologies	5
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • Special procedures for working on high voltage electric vehicles • Principles of operation for hybrid/electric and alternative powered vehicles • Consumer electronics (entertainment systems ETC) 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Carry out service, repair and diagnostic procedures according to manufacturers' requirements 	