worldskills

Technical Description

Automobile Technology

WorldSkills International, by a resolution of the Competitions Committee and in accordance with the Constitution, the Standing Orders, and the Competition Rules, has adopted the following minimum requirements for this skill for the WorldSkills Competition.

The Technical Description consists of the following:

1 Introduction

1.1 Name and description of the skill competition

1.1.1 The name of the skill competition is

Automobile Technology

1.1.2 Description of the associated work role(s) or occupation(s)

The Light Vehicle Automotive Technician will work in the service, diagnosis and repair sector of light vehicles in either independent workshops or the vehicle manufacturers' affiliated workshops.

The independent workshops will work on a range of vehicles that are usually more than three years old, with the manufacturers' affiliated workshops dedicated to working on their current range of vehicles.

In addition to learning within the workplace, the Light Vehicle Automotive Technician may be trained by government training organizations, independent training organizations, or vehicle manufacturers' training departments.

The Light Vehicle Automotive Technician will be able to service, diagnose, and repair a range of light vehicles using service and repair information, and a wide range of diagnostic and service tools. Success is measured in productivity, efficiency, correct diagnosis, repair, and repeat business.

The Light Vehicle sector is rapidly changing. This is being influenced by the wider economy, technological advances, and environmental concerns. The Light Vehicle Automotive Technician needs to have stamina, coordination, and kinaesthetic skills, and to keep themselves abreast of the continuous changes in the industry with an understanding of light vehicle systems and their applications.

An advanced Light Vehicle Automotive Technician is valued in the industry as they can undertake complex diagnostic tasks and repairs in a timely manner.

Career advancement may include senior roles such as a supervisor, a manager, a trainer, or operating their own business.

1.1.3 Number of Competitors per team

Automobile Technology is a single Competitor skill competition.

1.1.4 Age limit of Competitors

The Competitors must not be older than 22 years in the year of the Competition.

1.2 The relevance and significance of this document

This document contains information about the standards required to compete in this skill competition, and the assessment principles, methods, and procedures that govern the competition.

Every Expert and Competitor must know and understand this Technical Description.

In the event of any conflict within the different languages of the Technical Descriptions, the English version takes precedence.

1.3 Associated documents

Since this Technical Description contains only skill-specific information it must be used in association with the following:

- WSI – Code of Ethics and Conduct
- WSI – Competition Rules
- WSI – WorldSkills Occupational Standards framework
- WSI – WorldSkills Assessment Strategy
- WSI online resources as indicated in this document
- WorldSkills Health, Safety, and Environment Policy and Regulations
- WorldSkills Standards and Assessment Guide (skill-specific)

2 The WorldSkills Occupational Standards (WSOS)

2.1 General notes on the WSOS

The WSOS specifies the knowledge, understanding, skills, and capabilities that underpin international best practice in technical and vocational performance. These are both specific to an occupational role and also transversal. Together they should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, to the extent that it can. The Standard 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 only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standard 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. This is often referred to as the “weighting”. The sum of all the percentage marks is 100. The weightings determine the distribution of marks within the Marking Scheme.

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

The Marking Scheme will follow the allocation of marks within the Standards to the extent practically possible. A variation of up to five percent is allowed, if this does not distort the weightings assigned by the Standards.

2.2 WorldSkills Occupational Standards

Section		Relative importance (%)
1	**Work organization, management and safety**	**5**
	The individual needs to know and understand: • Working safely, including: ◦ Procedures ◦ Housekeeping ◦ Hygiene • The purpose, use, care, maintenance, and safety implications of: ◦ Equipment ◦ Materials ◦ Fluids • The risks of the automotive service repair industry, including: ◦ Causes ◦ Prevention	

Section		Relative importance (%)
	• Time management • The environment, including: ◦ Sustainability • Waste management	
	The individual shall be able to: • Prepare and maintain safe, tidy, and efficient workstations • Plan, prepare, and complete each task within the time available • Select, use, clean, store, and test all equipment and materials safely and in accordance with manufacturers' instructions • Apply the health, safety, and environmental standards within the automotive industry • Reinstate work areas and vehicles to an appropriate condition	
2	**Communication skills**	**15**
	The individual needs to know and understand: • Communication, including: ◦ Electronic means ◦ Written ◦ Verbal ◦ Non-verbal ◦ Use of technology • Technical language • Technical drawings • Schematics • Wiring diagrams • Record keeping and reporting • Customer service	
	The individual shall be able to: • Communicate with clarity, effectiveness, and efficiency in the workplace, including: ◦ Written ◦ Verbal ◦ Non-verbal ◦ Electronic means ◦ Use of technology ◦ Using standard formats • Read, interpret, and extract technical data and instructions • Use digital or manual systems to access documents • Complete reports and record keeping • Respond to customers' needs face to face and indirectly	

Section		Relative importance (%)
3	**Service**	**15**
	The individual needs to know and understand: • Scheduled maintenance vehicle servicing • The use and operation of relevant tools and equipment • The servicing requirements and procedures for vehicle systems, including: • Engine mechanical • Driveline and final drives • Steering and suspension • Brakes • Wheels and tyres • Battery and electrical • Fuel • Cooling	
	The individual shall be able to: • Perform vehicle servicing using the standards and procedures developed by the automobile industry and vehicle manufacturers as required on the above listed systems, including: • Inspection • Adjustment • Renewing or replacement • Tensioning • Lubrication • Use relevant tools and equipment	
4	**Electrical and mechanical systems inspection and diagnosis**	**45**
	The individual needs to know and understand: • The principles and applications of specialist diagnostic procedures • The use and operation of relevant tools, diagnostic tools and equipment • The principles and applications of condition, cause and correction in fault diagnosis • The construction and operation of the following systems: ◦ Spark ignition engine management ◦ Compression ignition engine management ◦ Engine mechanical ◦ Cooling ◦ Hybrid/electric vehicle ◦ Forced induction ◦ Emission control ◦ Exhaust ◦ Electrical/electronics ◦ Braking and stability control ◦ Suspension and steering	

Section		Relative importance (%)
	◦ Advanced driver assistance systems (ADAS) ◦ Drive train ◦ Heating ventilation air conditioning (HVAC) ◦ Air bag / supplementary restraint systems (SRS) ◦ Infotainment systems ◦ Communication interconnectivity systems	
	The individual shall be able to: • Apply the problem-solving techniques used in manufacturers' diagnostic procedures to identify the condition, cause, and correction of light vehicle faults in the above listed systems, including: ◦ Verify the condition, including: ◦ Visual inspection and basic tests ◦ Diagnose the cause, including: ◦ Using mechanical and electrical test equipment ◦ Retrieving scan tool data ◦ Check and interpret results ◦ Recommend corrective action	
5	**Repair and overhaul**	**20**
	The individual needs to know and understand: • The principles and applications of repair and overhaul procedures • The use and operation of relevant tools, special tools and equipment • The repair methods and procedures of the following systems: • Spark ignition engine management • Compression ignition engine management • Engine mechanical • Cooling • Hybrid/electric vehicles • Forced induction • Emission control • Exhausts • Electrical/electronics • Braking and stability control • Suspension and steering • Advanced driver assistance systems (ADAS) • Drive train • Heating ventilation air conditioning (HVAC) • Air bag/supplementary restraint systems (SRS) • Infotainment systems • Communication interconnectivity systems	

Section		Relative importance (%)
	The individual shall be able to: • Perform vehicle repairs using the standards and procedures developed by the automobile industry and vehicle manufacturers on the above listed systems, including: • Removal and replacement of components • Disassembly and reassembly of components • Replacement of parts • Overhaul of components • Measurement and adjustment of components • Testing of completed repair	
	Total	**100**

3 The Assessment Strategy and Specification

3.1 General guidance

Assessment is governed by the WorldSkills Assessment Strategy. The Strategy establishes the principles and techniques to which WorldSkills assessment and marking must conform.

Expert assessment practice lies at the heart of the WorldSkills Competition. For this reason, it is the subject of continuing professional development and scrutiny. The growth of expertise in assessment will inform the future use and direction of the main assessment instruments used by the WorldSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the WorldSkills Competition falls into two broad types: Measurement and Judgement. For both types of assessment, the use of explicit benchmarks against which to assess each Aspect is essential to guarantee quality.

The Marking Scheme must follow the weightings within the Standards. The Test Project is the assessment vehicle for the skill competition, and therefore also follows the Standards. The CIS enables the timely and accurate recording of marks; its capacity for scrutiny, support, and feedback is continuously expanding.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed, developed, and verified through an iterative process, to ensure that both together optimize their relationship with the Standards and the Assessment Strategy. They will be agreed by the Experts and submitted to WSI for approval together, to demonstrate their quality and conformity with the Standards.

Prior to submission for approval to WSI, the Marking Scheme and Test Project will liaise with the WSI Skill Advisors for quality assurance and to benefit from the capabilities of the CIS.

4 The Marking Scheme

4.1 General guidance

This section describes the role and place of the Marking Scheme, how the Experts will assess Competitors' work as demonstrated through the Test Project, and the procedures and requirements for marking.

The Marking Scheme is the pivotal instrument of the WorldSkills Competition, in that it ties assessment to the standard that represents each skill competition, which itself represents a global occupation. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards.

By reflecting the weightings in the Standards, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill competition and its assessment needs, it may initially be appropriate to develop the Marking Scheme in more detail as a guide for Test Project design. Alternatively, initial Test Project design can be based on the outline Marking Scheme. From this point onwards the Marking Scheme and Test Project should be developed together.

Section 2.1 above indicates the extent to which the Marking Scheme and Test Project may diverge from the weightings given in the Standards, if there is no practicable alternative.

For integrity and fairness, the Marking Scheme and Test Project are increasingly designed and developed by one or more Independent Test Project Designer(s) with relevant expertise. In these instances, the Marking Scheme and Test Project are unseen by Experts until immediately before the start of the skill competition, or competition module. Where the detailed and final Marking Scheme and Test Project are designed by Experts, they must be approved by the whole Expert group prior to submission for independent validation and quality assurance. Please see the Competition Rules for further details.

Experts and Independent Test Project Designers are required to submit their Marking Schemes and Test Projects for review, verification, and validation well in advance of completion. They are also expected to work with their Skill Advisor, reviewers, and verifiers, throughout the design and development process, for quality assurance and in order to take full advantage of the CIS's features.

In all cases a draft Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition. Skill Advisors actively facilitate this process.

4.2 Assessment Criteria

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived before, or in conjunction with, the Test Project. In some skill competitions the Assessment Criteria may be similar to the section headings in the Standards; in others they may be different. There will normally be between five and nine Assessment Criteria. Whether or not the headings match, the Marking Scheme as a whole must reflect the weightings in the Standards.

Assessment Criteria are created by the person or people developing the Marking Scheme, who are free to define the Criteria that they consider most suited to the assessment and marking of the Test Project. Each Assessment Criterion is defined by a letter (A-I). **The Assessment Criteria, the allocation of marks, and the assessment methods, should not be set out within this Technical Description. This is because the Criteria, allocation of marks, and assessment**

methods all depend on the nature of the Marking Scheme and Test Project, which is decided after this Technical Description is published.

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria and Sub Criteria.

The marks allocated to each Criterion will be calculated by the CIS. These will be the cumulative sum of marks given to each Aspect within that Assessment Criterion.

4.3 Sub Criteria

Each Assessment Criterion is divided into one or more Sub Criteria. Each Sub Criterion becomes the heading for a WorldSkills marking form. Each marking form (Sub Criterion) contains Aspects to be assessed and marked by Measurement or Judgement, or both Measurement and Judgement.

Each marking form (Sub Criterion) specifies both the day on which it will be marked, and the identity of the marking team.

4.4 Aspects

Each Aspect defines, in detail, a single item to be assessed and marked, together with the marks, and detailed descriptors or instructions as a guide to marking. Each Aspect is assessed either by Measurement or by Judgement.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it. The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the Standards. This will be displayed in the Mark Allocation Table of the CIS, in the following format, when the Marking Scheme is reviewed from C-8 weeks. (Section 4.1 refers.)

		CRITERIA								TOTAL MARKS PER SECTION	WSSS MARKS PER SECTION	VARIANCE
STANDARDS SPECIFICATION SECTION		A	B	C	D	E	F	G	H			
	1	5.00								5.00	5.00	0.00
	2		2.00					7.50		9.50	10.00	0.50
	3								11.00	11.00	10.00	1.00
	4			5.00						5.00	5.00	0.00
	5				10.00	10.00	10.00			30.00	30.00	0.00
	6		8.00	5.00				2.50	9.00	24.50	25.00	0.50
	7			10.00				5.00		15.00	15.00	0.00
TOTAL MARKS		5.00	10.00	20.00	10.00	10.00	10.00	15.00	20.00	100.00	100.00	2.00

4.5 Assessment and marking

There is to be one marking team for each Sub Criterion, whether it is assessed and marked by Judgement, Measurement, or both. The same marking team must assess and mark all Competitors. Where this is impracticable (for example where an action must be done by every Competitor simultaneously, and must be observed doing so), a second tier of assessment and marking will be put in place, with the approval of the Competitions Committee Management Team. The marking teams must be organized to ensure that there is no compatriot marking in any circumstances. (Section 4.6 refers.)

4.6 Assessment and marking using Judgement

Judgement uses a scale of 0-3. To apply the scale with rigour and consistency, Judgement must be conducted using:

- benchmarks (criteria) for detailed guidance for each Aspect (in words, images, artefacts, or separate guidance notes). This is documented in the Standards and Assessment Guide.
- the 0-3 scale to indicate:
  - 0: performance below industry standard
  - 1: performance meets industry standard
  - 2: performance meets and, in specific respects, exceeds industry standard
  - 3: performance wholly exceeds industry standard and is judged as excellent

Three Experts will judge each Aspect, normally simultaneously, and record their scores. A fourth Expert coordinates and supervises the scoring, and checks their validity. They also act as a judge when required to prevent compatriot marking.

4.7 Assessment and marking using Measurement

Normally three Experts will be used to assess each Aspect, with a fourth Expert supervising. In some circumstances the team may organize itself as two pairs, for dual marking. Unless otherwise stated, only the maximum mark or zero will be awarded. Where they are used, the benchmarks for awarding partial marks will be clearly defined within the Aspect. To avoid errors in calculation or transmission, the CIS provides a large number of automated calculation options, the use of which is mandated.

4.8 The use of Measurement and Judgement

Decisions regarding the choice of criteria and assessment methods will be made during the design of the competition through the Marking Scheme and Test Project.

4.9 Skill assessment strategy and procedures

WorldSkills is committed to continuous improvement including reviewing past limitations and building on good practice. The following skill assessment strategy and procedures for this skill competition take this into account and explain how the marking process will be managed.

Competitors may be assessed on any combination of the following:

- Work health and safety
- Housekeeping
- Sustainable work practices
- Preparation and completion of work
- Communication
  - Service
  - Diagnosis
  - Repair
  - Overhaul

If some or all Competitors are unable to complete one or more elements of a module due to shortfalls of the workstation itself or equipment failure the Skill Advisor will be consulted.

Experts are to complete a Marking Form for each Assessment Criteria for each individual Competitor.

Marks will vary according to the Marking Scheme defined for the Competition, but will align to the ranges defined in this section.

Expert marking teams are devised to include a mixture of WorldSkills experience, language, and culture.

Experts will assess the same Aspects for each Competitor.

5 The Test Project

5.1 General notes

Sections 3 and 4 govern the development of the Test Project. These notes are supplementary.

Whether it is a single entity, or a series of stand-alone or connected modules, the Test Project will enable the assessment of the applied knowledge, skills, and behaviours set out in each section of the WSOS.

The purpose of the Test Project is to provide full, balanced, and authentic opportunities for assessment and marking across the Standards, in conjunction with the Marking Scheme. The relationship between the Test Project, Marking Scheme, and Standards will be a key indicator of quality, as will be its relationship with actual work performance.

The Test Project will not cover areas outside the Standards or affect the balance of marks within the Standards other than in the circumstances indicated by Section 2. This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standards. Section 2.1 refers.

The Test Project will enable knowledge and understanding to be assessed solely through their applications within practical work. The Test Project will not assess knowledge of WorldSkills rules and regulations.

Most Test Projects and Marking Schemes are now designed and developed independently of the Experts. They are designed and developed either by the Skill Competition Manager, or an Independent Test Project Designer, normally from C-12 months. They are subject to independent review, verification, and validation. (Section 4.1 refers.)

The information provided below will be subject to what is known at the time of completing this Technical Description, and the requirement for confidentiality.

Please refer to the current version of the Competition Rules for further details.

5.2 Format/structure of the Test Project

The Test Project is a series of standalone modules.

5.3 Test Project design requirements

Test Projects should reflect the purposes, structures, processes, and outcomes of the occupational role they are based on. They should aim to be a small-scale version of that role. Before focusing on practicalities, SMTs should show how the Test Project design will provide full, balanced, and authentic opportunities for assessment and marking across the Standards, as set out in Section 5.1.

The total working time for the modules is between 15 and 22 hours.

- Each assessment shall include:
  - Description of tests;
  - Competitor instructions for completing test;
  - Competitor report sheets (if necessary);
  - Instructions to the Workshop Manager.

All Test Projects must be based on a combination of light vehicles and/or simulators which includes a minimum of four different manufacturers of global light vehicle or Assessments for Automobile Technology competitions.

The number and specification of the Test Projects on the list must not be taken as complete or final as it is intended that regular amendments and additions will follow:

- In the light of its use over a period of time;
- In the interest of arriving at a more complete list;
- In regard to technological change and subsequent updating with respect for the regulations of the Competition Organizer.

Any instructions to Competitors should be provided in the format as per the instruction sheet.

To assist with the preparation of Competitors a list of standards from the WSOS that will not be tested will be posted on the WorldSkills Discussion Forum.

5.4 Test Project coordination and development

The Test Project MUST be submitted using the templates provided by WorldSkills International (www.worldskills.org/expertcentre). Use the Word template for text documents and DWG template for drawings.

5.4.1 Test Project coordination (preparation for Competition)

Coordination of the Test Project/modules will be undertaken by the Skill Competition Manager.

5.4.2 Who develops the Test Project/modules

The Test Project/modules are developed by an Independent Test Project Designer (ITPD) in collaboration with the Skill Competition Manager.

5.4.3 When is the Test Project developed

The Test Project/modules are developed according to the following timeline:

Time	Action
Ten (10) months prior to the Competition	The ITPD is identified and a Confidentiality Agreement between WSI and the ITPD is organized.
No later than one (1) month prior to the Competition	The Test Project documents are sent to the WorldSkills International Skills Competitions Administration Manager.
Two weeks (14 days) prior to C1	The Test Project/modules will be released via the WorldSkills website to enable translation prior to the competition, without technical details.
At the Competition on C-2	The Test Projects/modules with the technical details are presented to Experts and Competitors. The appropriate Marking Schemes for those modules Experts are assigned to are presented.

5.5 Test Project initial review and verification

The purpose of a Test Project is to create a challenge for Competitors which authentically represents working life for an outstanding practitioner in an identified occupation. By doing this, the Test Project will apply the Marking Scheme and fully represent the WSOS. In this way it is unique in its context, purpose, activities, and expectations.

To support Test Project design and development, a rigorous quality assurance and design process is in place (Competition Rules sections 10.6-10.7 refer.) Once approved by WorldSkills, the Independent Test Project Designer (ITPD) is expected to identify one or more independent expert(s), and trusted individuals initially to review the Independent Test Project Designer's ideas and plans, and subsequently to verify the Test Project, prior to validation.

A Skill Advisor will ensure and coordinate this arrangement, to guarantee the timeliness and thoroughness of both initial review, and verification, based on the risk analysis that underpins Section 10.7 of the Competition Rules.

5.6 Test Project validation

The Skill Competition Manager coordinates the validation of the Test Project/modules and will ensure that it can be completed within the material, equipment, knowledge, and time constraints of Competitors.

5.7 Test Project circulation

The Test Project/modules are circulated 14 days prior to the Competition via the WorldSkills website without technical details.

5.8 Test Project change

Due to the Test Project being circulated prior to the Competition, an Independent Test Project Designer must develop a 30% change as required by WorldSkills. The report sheets with the technical details constitute the 30% change. This change is presented to Experts and Competitors at the Competition on C-2.

5.9 Material or manufacturer specifications

Specific material and/or manufacturer specifications required to allow the Competitor to complete the Test Project will be supplied by the Competition Organizer and are available from www.worldskills.org/infrastructure located in the Expert Centre. However, note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

The notification of the light vehicle manufacturer and the manufacture of the light vehicle components within the simulator will be released 30 days prior to the start of the competition. NO model, VIN numbers, or any information that can identify, the model of the vehicles or vehicle components within the simulators, will be released prior to the Competition. No specific spare parts for the above can be listed in the IL prior to the start of the competition. All other supplies can be mentioned in the Infrastructure List in reference to section 8.3.

The manufacturers of the light vehicles are announced by the Skill Competition Manager on the WorldSkills Discussion Forum 30 days prior to C1.

6 Skill management and communication

6.1 Discussion Forum

Prior to the Competition, all discussion, communication, collaboration, and decision making regarding the skill competition must take place on the WorldSkills skill-specific Discussion Forum. (http://forums.worldskills.org). Skill related decisions and communication are only valid if they take place on the WorldSkills Discussion Forum. The Chief Expert (or an Expert Lead appointed by the Skill Management Team) will be the moderator for this Discussion Forum. Refer to the Competition Rules for the timeline of communication and competition development requirements.

6.2 Competitor information

All information for registered Competitors is available from the Competitor Centre (www.worldskills.org/competitorcentre).

This information includes:

- Competition Rules
- Technical Descriptions
- Mark Summary Form (where applicable)
- Test Projects (where applicable)
- Infrastructure List
- WorldSkills Health, Safety, and Environment Policy and Regulations
- Other Competition-related information

6.3 Test Projects and Marking Schemes

Circulated Test Projects will be available from www.worldskills.org/testprojects and the Competitor Centre (www.worldskills.org/competitorcentre).

6.4 Day-to-day management

The day-to-day management of the skill competition during the Competition is defined in the Skill Management Plan that is created by the Skill Management Team. The Skill Management Team comprises the Skill Competition Manager, Chief Expert, and the Expert Leads. The Skill Management Plan is progressively developed in the six (6) months prior to the Competition and finalized at the Competition. The Skill Management Plan can be viewed in the Expert Centre (www.worldskills.org/expertcentre).

6.5 General best practice procedures

General best practice procedures clearly delineate the difference between what is a best practice procedure and skill-specific rules (section 9). General best practice procedures are those where Experts and Competitors CANNOT be held accountable as a breach to the Competition Rules or skill-specific rules which would have a penalty applied as part of the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System. In some cases, general best practice procedures for Competitors may be reflected in the Marking Scheme.

Topic/task	Best practice procedure
Allocation of workstations/modules	• All Competitors will be timetabled in the module with their compatriot Expert during the first round of competition (where possible).

7 Skill-specific safety requirements

7.1 Personal Protective Equipment

Refer to WorldSkills Health, Safety, and Environment Policy and Regulations for Host country or region regulations.

Task	Safety shoes with protective cap	Sturdy shoes with closed toe and heel	General protective gloves
General PPE for safe areas		√	
For all workstations	√		As required for the module

8 Materials and equipment

8.1 Infrastructure List

The Infrastructure List details all equipment, materials, and facilities provided by the Competition Organizer.

The Infrastructure List is available at www.worldskills.org/infrastructure.

The Infrastructure List specifies the items and quantities requested by the Skill Management Team for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

At each Competition, the Skill Management Team must review and update the Infrastructure List in preparation for the next Competition. The Skill Competition Manager must advise the Director of Skills Competitions of any increases in space and/or equipment.

At each Competition, the Technical Observer must audit the Infrastructure List that was used at that Competition for the upcoming WorldSkills Competition.

The Infrastructure List does not include items that Competitors and/or Experts are required to bring and items that Competitors are not allowed to bring – they are specified below.

8.2 Competitors toolbox

Competitors are not allowed to send a toolbox to the Competition. All tools are provided by the Competition Organizer.

8.3 Materials, equipment, and tools supplied by Competitors

It is not applicable for Competitors to bring materials, equipment, and tools to the Competition.

However, Competitors are required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.

8.4 Materials, equipment, and tools supplied by Experts

Experts are required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.

Experts are responsible that Interpreters bring their PPE.

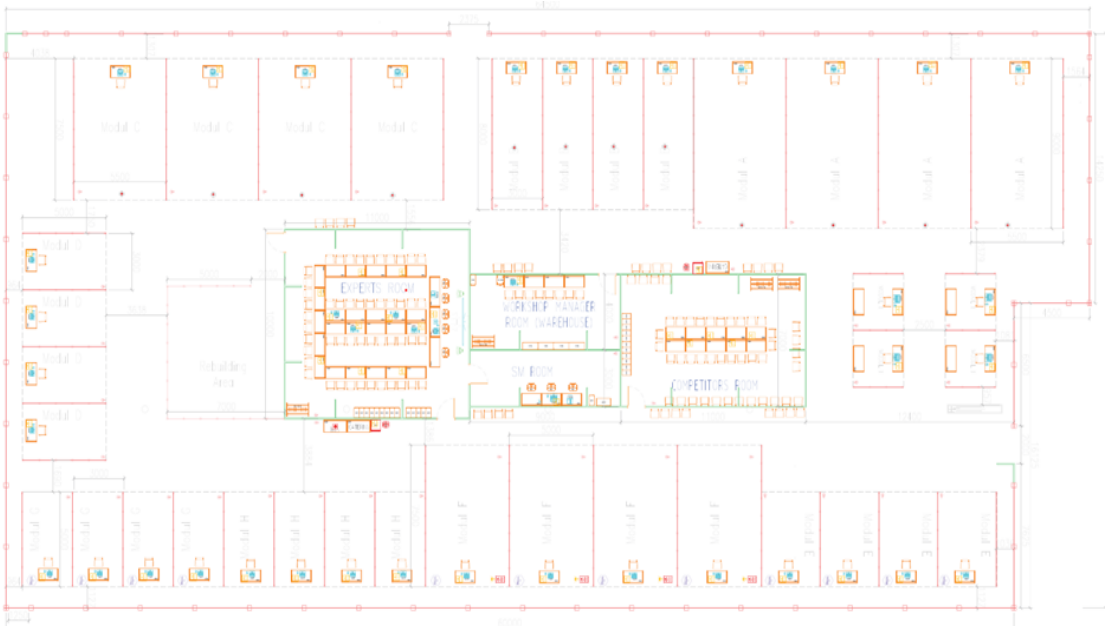
8.5 Materials and equipment prohibited in the skill area

Competitors and Experts are prohibited to bring any materials or equipment not listed in section 8.3 and section 8.4.

8.6 Proposed workshop and workstation layouts

Workshop layouts from previous competitions are available at www.worldskills.org/sitelayout.

Example workshop layout



9 Skill-specific rules

9.1 General notes

Skill-specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from skill competition to skill competition. This includes but is not limited to personal IT equipment, data storage devices, Internet access, procedures and workflow, and documentation management and distribution. Breaches of these rules will be solved according to the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System.

9.2 Skill-specific rules

Topic/task	Skill-specific rules
Use of technology – personal laptops, tablets, and mobile phones	• The Chief Expert, Experts, Competitors, and Interpreters are allowed to bring personal laptops, tablets and mobile phones into the workshop, however when not in use they must remain in the locker. Laptops and tablets must remain in the locker until the end of C4, however mobile phones can be taken at lunch time and the end of each day. The Skill Competition Manager is exempt from this rule. • Competitors cannot bring phones into the work area. They must remain in the Competitor's locker during the competition time. Competitors can use their phones during lunch time away from the competition area. Competitors can take their phones at the end of each day. • Interpreters are not allowed phones (communication technology) in the workshop area unless authorized by the SCM. If brought in they can be locked in the personal locker and removed at lunch time and the end of each day. • Any digital translation can be done using the supplied computer in the Expert roo.m
Use of technology – personal photo and video taking devices	• No photos / videos can be taken prior to C1. After C1 Experts can take photos of their compatriot Competitor but no workstations until their compatriot Competitor is competing in that module or has completed that module. • Competitors cannot take photos of workstations from outside the competition area during the competition.
Use of technology – USB, memory sticks	• The Skill Competition Manager, Chief Expert, Experts, Competitors, and Interpreters are not allowed to bring memory sticks into the workshop as they will be supplied by the Competition Organizer. They must be returned to the Chief Expert at the end of each day. • If these items are brought into the workshop, they must be locked away in the personal locker and not removed until the end of competition on C4.

Topic/task	Skill-specific rules
Templates, aids, etc.	• Competitors are not allowed to bring or use any templates, notes, aids at the workstation during competition time. • All notes taken during competition time must be given with the Test Project information, report sheet (where applicable) to the Expert in charge of that module at the workstation of that module.
Competitor movement	• Competitors during the competition must not stay around the outside of the competition workshop • Competitors must not enter the competition workshop unless instructed to by Chief Expert. They must wait outside the entry until instructed otherwise. • When Competitors enter the workshop, they must go straight to the Competitors room unless otherwise instructed to by the Chief Expert.

10 Visitor and media engagement

10.1 Engagement methods

Following is a list of possible ways to maximize visitor and media engagement:

- Try-a-Skill;
- Display screens;
- Test Project descriptions;
- Enhanced understanding of Competitor activity;
- Competitor profiles;
- Career opportunities;
- Daily reporting of Competition status.

11 Sustainability

11.1 Sustainable practices

This skill competition will focus on the sustainable practices below:

- Reduce
- Reuse
- Recycle
- Use of “green” materials
- Use of completed Test Projects after Competition

12 References for industry consultation

12.1 General notes

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (http://www.ilo.org/public/english/bureau/stat/isco/isco08/)
- ESCO: (https://ec.europa.eu/esco/portal/home)
- O*NET OnLine (www.onetonline.org/)

12.2 References

This WSOS (Section 2) appears to relate to *Automotive Master Mechanics*:
https://www.onetonline.org/link/summary/49-3023.01

and partly to *Automotive Engineering Technician:*
http://data.europa.eu/esco/occupation/444c9aa9-578d-4a9a-9949-99ef1bacb20e

The following table indicates which organizations were approached and provided valuable feedback for the Description of the Associated Role and WorldSkills Occupational Standards in place for WorldSkills Lyon 2024.

There were no responses to the requests for feedback this cycle.

13 Appendix

13.1 Appendix information

Not applicable.