WORLDSKILLS STANDARD SPECIFICATION

Skill 02

Information Network Cabling

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	Work organization and management	10
	The individual needs to know and understand: • Health and safety legislation, obligations, regulations and documentation • Basic first aid • The negative impacts on businesses and organisations of poor or unreliable network installations • The situations when personal protective equipment (PPE) must be used e.g. for ESD (electrostatic discharge) • The correct procedures for working with laser technologies • The purposes, uses, care, maintenance, safe handling and storage of equipment in an ESD friendly environment • The importance of integrity and security when dealing with user equipment and information • The importance of safe disposal of waste for re-cycling • The techniques of planning, scheduling and prioritising • The significance of accuracy, checking and attention to detail in all working practices • The importance of methodical working practices • Research methods and techniques • The value of managing own continuing professional development • The speed of IT systems change • Specialist terminology and symbols used in network cabling • Various types of information network technology and their applications including, Ethernet technology, local area networks (LAN) technology and office/home network technology • Mathematics and physics • The laws of electricity	

	The individual shall be able to: • Follow health and safety standards, rules, and regulations • Maintain a safe working environment including the use of ladders for access to high work • Use personal protective equipment correctly • Identify and use the appropriate personal protective equipment for ESD • Select, use, clean, maintain and store tools and equipment safely and securely • Plan the work area to maximise efficiency and maintain the discipline of regular tidying • Regularly schedule and re-schedule and multi-task according to changing priorities • Work efficiently and check progress and outcomes regularly • Be actively working towards fulfilling industry certification requirements and keep up-to-date with 'license to practice' requirements (determined by their own country) and to complete regular Continued Professional Development (CPD) • Demonstrate thorough and efficient research methods to support knowledge growth • Demonstrate enthusiasm to try new methods, systems and embrace change • Apply sound mathematical skills to the planning, preparation and execution off cabling tasks • Read, understand and apply manufacturers' instructions	
2	Communication and interpersonal skills	5
	The individual needs to know and understand: • The importance of listening as part of effective communication • The roles and requirements of colleagues and the most effective methods of communication • The importance of building and maintaining productive working relationships with colleagues and managers • Techniques for effective team work • Techniques for resolving misunderstandings and conflicting demands • The process for managing tension and anger to resolve difficult situations	

	The individual shall be able to: • Demonstrate strong listening and questioning skills to deepen understanding of complex situations • Manage consistently effective verbal and written communications with colleagues • Recognize and adapt to the changing needs of colleagues • Pro-actively contribute to the development of a strong and effective team • Share knowledge and expertise with colleagues and develop a supportive learning culture • Manage tensions and anger in others, providing confidence that problems can be resolved • Discuss customer's requirements and provide expert advice and consultancy • Liaise with other professional and suppliers to create a fully tailored package that fulfils the customer's needs • Respect the impact that cabling activity can have on a busy working environment, show consideration and care, causing least disruption at all times • Prepare quotations for planned work and present to customers	
3	Planning	10
	The individual needs to know and understand: • The process for building cabling including backbone and horizontal • Residential and office cabling systems • Outside plant cabling • Wi-Fi applications • Network applications for CCTV, security etc. • Industry accepted terminology and symbols used in specifications and drawings • Principles of technical drawings and specifications that are recognised by the industry	
	The individual shall be able to: • Have strong problem solving skills; • Work independently by planning, ordering and prioritising work in order to maximize efficiency and to adhere to planned time schedules; • Schedule work required to achieve a given outcome; • Prepare, read, interpret and analyse specialist's technical drawings and specifications; • Select the tools and systems that are most appropriate for the planned task; • Assess work sites to effectively identify risks and thereby prevent or minimize hazards; • Assess buildings and plan the location of cables to minimise damages, unsightliness and risks	

4	Cabling	25
	The individual needs to know and understand: • The different types of cable, their characteristics, uses and how they relate to other aspects of the network; • Unshielded Twisted Pair (UTP) cable • Shielded Twisted Pair (STP) • Coaxial Cable • Fibre Optic Cable • Categories or quality of cable relating to the speed required and planned use	
	The individual shall be able to: • Install and run cables, install rack cabinets, fit network sockets and patch panels. • Interpret and analyse complex plans and specifications • Prioritize work and comply with plans to minimise disruption and to meet agreed time scales • Clean the area after completing drilling and similar activities • Organize and label cabling to make future reconfiguring straightforward • Respect the client's building, keeping it tidy and clean • Terminate and test all installed cables	
5	Optic Fibre Structured Cabling System	15
	The individual needs to know and understand: • Cables and connecting hardware • Optical fibre cable classification • The uses of various connectors for optical fibre cables • Planning processes for optical fibre structured systems • Processes for installing optical fibre cables • How to build cabling including backbone and horizontal • The cabling appropriate for commercial and domestic use	

	The individual shall be able to:
	• Plan optical fibre structured cable systems
	• Select appropriate cable for the proposed use
	• Prepare optical fibre cables by removing cable jacket and buffer as appropriate
	• Install and optical fibre cable systems
	• Splice optical fibre cables
	• Fusion splicing
	• Mechanical splicing
	• Cable preparation
	• Prepare optical fibre cable
	• Splicing optical fibre
	• Install optical closure
	• Store and protect optical fibre cable during storage
	• Install optical fibre cable connector to terminate or join cables
	• Inspect and clean installed cabling and rectify if necessary
	• Install optical closure and enclosure
	• Store cable into a tray
	• Cable entry/out and fixing
	• Cable buffer management
	• Test optical fibre cables:
	  • Optical loss test set (OTLS)
	  • Optical time domain reflectometre (OTDR)
	• Select appropriate test equipment	

6	Copper Structured Cabling System	15
	The individual needs to know and understand: • Copper cabling systems • Types and uses of different types of copper cable • Connecting hardware • How to plan for and install cable	
	The individual shall be able to: • Select correct type of cable for the planned project • Install cable setup for horizontal and vertical pathway • Pull horizontal cable in conduit and raceway • Install backbone for horizontal and vertical pathway • Remove jacket of multi-twisted cable, xTP cable and coaxial cable • Use copper insulation displacement (IDC) termination to terminate RJ45 modular jack (U/UTP, SF/UTP, S/FTP), terminate RJ45 modular plug (Cat.5e,Cat.6\ • Terminate coaxial cable • Install telecommunication outlet • Install patch panel • Install switching Hub • Test copper cable using LAN tester (ex.DTX) • Field test 100-ohm balanced twisted-pair cable	

7	Wireless Systems	10
	The individual needs to know and understand: • IEEE802.11 series	
	The individual shall be able to: • Install an access point of Wi-Fi • Set up a Wi-Fi system	
8	Troubleshooting and Ongoing Maintenance	5
	The individual needs to know and understand: • Where potential system faults may occur • Potential disruption to business activity resulting from system faults	
	The individual shall be able to: • Identify, locate and diagnose system faults • Rectify faults • Install updates to ensure systems meet emerging business needs • Provide expert advice and guidance on use of the system, its features and limitations	
9	Measurement	5
	The individual needs to know and understand: • The principles and purposes of measuring devices • The practical uses of measuring devices	
	The individual shall be able to: • Perform measurements in copper cable • Perform measurements in optical fibre	