WorldSkills Standards Specification

Mobile Robotics

Manufacturing and Engineering Technology

worldskills

 WSC2019_WSSS23

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 only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

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. This is often referred to as the "weighting". 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**	**5**
	The individual needs to know and understand: • Health and safety legislation, obligations, and documentation • Accident/first-aid/fire emergency procedures and reporting • How to work safely with electricity • The situations when personal protective equipment must be used • The purposes, uses, care, maintenance, and storage of all tools and equipment together with their safety implications • The purposes, uses, care, and storage of materials to include effects of temperature and sunlight • The importance of following manufacturer's instructions, e.g. surface preparation, internal angles, shading, and application • Sustainability measures applying to the use of 'green' materials and recycling • The ways in which working practices can minimize wastage and help to manage costs • The principles of work flow and measurement • The significance of planning, accuracy, checking, and attention to detail in all working practices • The value of managing own continuing professional development	
	The individual shall be able to: • Follow health and safety standards, rules and regulations including manufacturer's • Identify health and safety hazards on construction sites and undertake risk assessments • Position warning signs and notices for the safety of the general public • Identify and use the appropriate personal protective equipment including safety footwear, ear, and eye protection • Take necessary safety precautions when working at heights, e.g. using scaffolding and ladders • Select, use, clean, maintain, and store all tools and equipment safely • Select, use, and store all materials safely • Plan the work area to maximize efficiency and maintain the discipline of regular tidying • Consistently measure accurately • Work efficiently and check progress and outcomes regularly • Consistently maintain high quality standards and working processes	

2	**Communication and interpersonal skills**	**10**
	The individual needs to know and understand: • The significance of establishing and maintaining customer confidence technical considerations related to heritage/preservation work • The roles and requirements of architects and related trades • The value of building and maintaining trust/productive working relationships • The importance of swiftly resolving misunderstandings and conflicting demands	
	The individual shall be able to: • Interpret customer requirements and manage customer expectations positively • Visualize and translate customer wishes making recommendations which meet/improve their design and budgetary requirements • Provide specialist technical advice and guidance on heritage projects • Present portfolio of previous work to demonstrate range and quality of experience and expertise • Produce a cost and time estimate for customers • Recognize the needs of architects and related trades • Introduce architects and related trades to support customer requirements • Work effectively in a team to facilitate efficiency/productivity/quality and cost control	
3	**Problem solving, innovation, and creativity**	**5**
	The individual needs to know and understand: • The types of problem which can occur within the work process such as poor pasting • Diagnostic approaches to problem solving • Trends and developments in the industry including new materials, Methods, and equipment/technology, e.g. colour mixing	
	The individual shall be able to: • Check work regularly to minimize problems at a later stage • Challenge incorrect information to prevent problems • Recognize and understand problems swiftly and follow a self-managed process for resolving • Recognize opportunities to contribute ideas to improve the product and overall level of customer satisfaction • Show willingness to try new methods and embrace change	

4	**Produce and interpret plans/technical drawings**	**10**
	The individual needs to know and understand: • The details required for floor plans in construction drawings including sections, datum levels, wall constructions, material codes, depth dimensions, heights, schedules, and specifications • Symbols e.g. for materials • Scales • The benefits of planning the sequence of material and labour requirements including the use of bills of quantities, programmes of work, stock systems, critical path analysis, lead times, schedules, and pricing systems • External and internal colour schemes, e.g. monochromatic, analogous, and complementary, warm/advancing, contrasting, and cool/receding • The need for accurate drawings to produce accurate work	
	The individual shall be able to: • Produce hand or computer aided designs (CAD) • Interpret drawings accurately • Produce colour schemes • Provide colour matches e.g. for type/era of building • Check for specialist requirements, e.g. to be fire retardant • Accurately measure from technical drawings and scale • Check for accuracy, challenge and make recommendations to architect/client • Accurately calculate quantities of materials required and price work • Produce schedules of work	
5	**Apply paint brush and roller**	**25**
	The individual needs to know and understand: • Purposes of painting: protection, preservation, sanitation, decoration, and identification, e.g. colour coding • The significance of following manufacturer's guidelines • COSHH requirements • Impact of materials on the general public and necessary precautions e.g. allergies • Range of brushes, rollers and trowel/texturing tools • The variety of surface coatings e.g. water and solvent borne; wood Treatments, e.g. stains and preservatives	

	The individual shall be able to: • Check condition of substrates e.g. new or existing, hazardous/non-hazardous • Check type of substrates e.g. timber, plaster (porous and non-porous • surfaces), plastic, or metal • Use the correct preparation process for the type of substrate to include: cleaning, priming, de-greasing, sealing • Prepare the paint following the correct process, including: stirring/mixing/straining • Select the appropriate equipment to apply the paint depending on the • material, substrate, and quantity of work • Take into consideration the effects of temperature on paint e.g. humidity levels and weather conditions for external work • Protect the surrounding area to include: coverage of floors/features and signage to avoid effects on people • Apply the correct paint system for the type of substrate using brush, • roller, paint pad, or spray, e.g. primer, undercoat, and gloss • Use masking aids for 'cutting in'/producing accurate lines • Regularly check the quality of the painting by opacity test to ensure • consistent coverage • Refer to other trades where problems emerge (immediately or at a later stage) for investigation, e.g. water stain • Check quality of finish meets specification to include no defects and take any corrective action	
6	**Apply paint by spray**	**15**
	The individual needs to know and understand: • Purposes of painting: protection, preservation, sanitation, decoration, and identification, e.g. colour coding • The importance of following manufacturer's guidelines • COSHH requirements • The impact of materials on the general public and necessary precautions, e.g. allergies • Materials which cannot be sprayed e.g. paste and some primers	

	The individual shall be able to: • Check condition of substrate, e.g. new or existing • Check type of substrate, e.g. timber, plastic, or metal • Use the correct preparation process for the type of substrate to include: cleaning, priming, de-greasing, and sealing • Prepare the paint following the correct process, as appropriate, to include: stirring/mixing/straining and viscosity required • Select the appropriate equipment to apply the paint depending on the material, substrate, and quantity of work • Take into consideration the effects of temperature, on paint, e.g. humidity levels and weather conditions for external work • Protect the surrounding area to include: coverage of floors/features and signage to avoid effects on people • Select the appropriate spray equipment e.g. HVLP, airless, electro-static, and pressure feed • Apply spray paint, following COSHH and manufacturer's guidelines for the type of substrate, e.g. primer, undercoat, and gloss • Use large scale masking aids for 'cutting in'/producing accurate lines • Clean and thoroughly maintain spray equipment • Regularly check the quality of the painting by opacity test to ensure consistent coverage • Check film thickness by WFT (wet film thickness) or DFT (dry film thickness) • Refer to other trades where problems emerge (immediately or at a later stage) for investigation, e.g. water stain • Check quality of finish meets specification to include no defects and take any correction action	
7	**Apply wallpaper**	**15**
	The individual needs to know and understand: • Methods of production including: wet embossing, laminating, dry embossing, heat expansion, particles on to wet adhesive • Methods of printing to include: block, screen, machine, wet, dry, and embossing • Types of pattern to include: set/straight match, drop/offset match, and random/free match • Range of papers (including specialist) and their characteristics: pulps, • anaglyptic, washable, vinyl, duplex, simplex, fabric-backed vinyl, paper backed fabrics, hand-print, paper-backed vinyl, warps/weft less, lincrusta, supadurables, flock, hessian, metallic, glass fibre, foil, and damp • The situations when lining paper is required, including solvent-painted • Wall and excessive making good • Methods of trimming: pre-trimmed and remove selvedge • The importance of accurate trimming when removing a selvedge • Methods of jointing, for paper types to include: butt, overlap, and cut • International performance symbols e.g. spongeable, peelable, and off-set match • Types of adhesive, e.g. cellulose and starch and their suitability for different papers • Pasting methods in relation to the range of papers: pasting machine • Brush, roller, ready pasted and past the wall	

	The individual shall be able to: • Check condition of substrate, e.g. new or existing • Check type of substrate, e.g. timber, plastic, plaster, or metal • Use the correct preparation process for the type of substrate to include: cleaning, priming, de-greasing, sealing for a defect, e.g. water or oil stains • Size and seal for even porosity of the surface or apply lining paper as appropriate • Check for pattern matching requirements: random, set, off-set, alternate lengths, and reverse • Cut and trim wallpaper efficiently for cost effectiveness • For high quality/expensive papers take particular precautions, e.g. use of cotton gloves • Paste the wall and the paper or use a pasting machine (if not ready pasted) using a range of adhesives e.g. for vinyl, flock, and lincrusta • Ensure manufacturer's guidelines are followed with regard to soaking times as necessary • Select the best starting position, e.g. working away from the light and take into consideration patterns including murals • Hang to vertical or plumb line and check for accuracy, taking corrective action as required • Re-plumb as appropriate e.g. around obstacles • Ensure joints are butt with exceptions such as damp-proof paper • Check for quality, e.g. shade variation and notify manufacturer as appropriate • Check overall quality meets customer specification	
8	**Apply decorative techniques**	**10**
	The individual needs to know and understand: • Historical considerations for restoration and preservation work e.g. following a flood or fire • Variety of decorative techniques • Preparation methods to include: wet abrading, dry abrading, making • Good and spot priming • Defects which can occur: uneven colour, ropiness, sinking, bittiness • Appropriate coating types for use as ground coats for painted decorative work	
	The individual shall be able to: • Select and use and apply specialist materials e.g. sponging, ragging, bagging, stippling and blending, wood graining, marbling and trompe l'oeil, gilding (gold and silver leaf) • Select and use specialist tools, e.g. for gilding • Design and apply stencils • Apply to a range of surfaces, e.g. cardboard, plastic, timber, plaster, and metal • Prepare the surfaces to a perfect finish including clean, smooth, and sized	

9	**Apply sign writing/lettering**	**5**
	The individual needs to know and understand: • Stencil types: positive, negative, and multi-plate • Methods used for enlarging and reducing stencils: accurate measurement, grid, illuminated projection, and photocopy • Methods of transferring a design – including trace, pounce, and photocopy onto the stencil plate materials of paper and proprietary • Stencil card • The suitability of base materials used for cutting stencil plates: glass plate, proprietary cutting mat • The importance of cleanliness, hand position, knife angle, direction of cutting, blade sharpness, repair of broken ties, size and sequence of pattern (small areas and vertical lines first), free movement of stencil plate, margin widths • Methods for securing stencils to surfaces: proprietary, spray adhesive, and tape (masking, low-tack)	
	The individual shall be able to: • Take into consideration number of repeats/connections, location of doors, windows, corners, access requirements, room dimensions, stencil size, and spacing when working on walls • Follow the required order of application • Transfer images using different methods, e.g. tracing, pouncing, CAD materials • Apply the frisk film using different methods, e.g. spray and roller • Ensure enlarging • Apply the finish by free hand or template • Accurately measure when setting out the lettering	
	Total	**100**

REFERENCES FOR INDUSTRY CONSULTATION

WorldSkills is committed to ensuring that the WorldSkills Standards Specifications 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 Standards Specification 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.**oneto**nline.org/).

This WSSS (Section 2) appears to relate most closely to *Construction Painter:* http://data.europa.eu/esco/occupation/15620506-fb5d-49cd-87a2-1c9047fb406a

and *Paperhangers*: https://www.onetonline.org/link/summary/47-2142.00

Adjacent occupations can also be explored through these links.