

WORLDSKILLS STANDARD SPECIFICATION

Skill 06
CNC Turning





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	5
Work organization and management	
The individual needs to know and understand: <ul style="list-style-type: none">• The scope and limits of the workshop and the workspace• The safety rules governing the all aspects of the workshop and own role• Safety equipment (how to use, when to use, etc.)• Different types of energy (electric, hydraulic, pneumatic)• The use and care of the available computer operating systems• CAM software (usage, setting parameters, dialoguing)• CNC Lathe (switching, manipulating, programming, capacities)• Measurement tools (manipulating, accuracy)• Cutting tools (geometries and orientation, capacities, destination)• Accessories (clamping devices, tailstock, etc.)	



	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Receive and prepare a workspace including a CNC Lathe • Apply all relevant safety rules • Organize the workspace for optimal performance • Check the condition and functionality of the workspace, equipment, tools and materials, in keeping with good health and safety requirements and practices • Communicate with the Workshop Manager regarding missing, substandard or anomalous items • Alert the Workshop Manager to irregularities or hazardous situations 	
2	To identify the requirement	5
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • ISO E and/or ISO A (European and American) drawing representation • Technical terms and symbols used in drawings and plans • Standards, symbol and tables • Technical data sheets • Drawing legends • The properties, uses and handling of material 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Locate and identify dimensions and tolerances • Locate and identify ISO standards surface finish requirements • Locate and identify ISO standards geometric specifications • Make 3D mental representations of the parts • Identify the materials that parts are made of • Visualize the parts inside the raw material 	
3	To elaborate strategies	35
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • Conventional use of the environment • How material will react when cutting it • The tools and speeds to use • How material will react when clamping it • How to obtain the required specifications using the selected procedures 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Imagine solutions to realize expected work using capacities of the environment and according to the required work (size of batch, complexity) • Mind-visualize each solution, check if any of these can accomplish every required specification • Check if the solution will be reliable until the end of the process • Weight each solution • Choose which of these solutions will be the best (faster, safer, cheaper) • Imagine innovative ways of using the environment to solve technical issues • Make a final choice and lock the strategy 	



4	To use the environment to accomplish the work	50
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none">• How to setup a CAM software<ul style="list-style-type: none">• Tools modelling• Profile drawing• Geometric complex constructions• Mathematics• Speeds setup• Choosing a postprocessor• Generating G-Code• Dialoguing with the CNC Lathe• How to setup a tool kit<ul style="list-style-type: none">• Take out chosen tools• Check cutting part, change if necessary• Knowledge of tool mounting• Know how tools has to be mounted• How to setup a measurement instrument kit<ul style="list-style-type: none">• Take out chosen instruments• How to calibrate them• How to use them with accuracy• Understand how temperature interacts with the values• How to use a CNC Lathe<ul style="list-style-type: none">• Switch on• Initializing• Manipulating• Mounting tools, setting up parameters• Mounting clamping, setting up parameters• Loading program• Testing program• Clamp the part• Run the program safely• Stopping and restarting a cycle• Emergency stopping• Setting up dimension parameters	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none">• Following his/her strategy<ul style="list-style-type: none">• Set up and use the CAM software, generate a suitable program• Set up a toolkit and mount it on the lathe• Set up a measurement toolkit• Set up a CNC Lathe, run a program• Quickly react if anything goes wrong• Get dimensions, geometries, surface roughness by interacting with the CNC Lathe• Get the final part to conform to the blueprint	



5	To deliver and to report	5
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none">• Whether the part conforms 100% to the required specifications• Whether there are any issues with the part made• Whether there are solutions to any issues• The potential solutions and their implications	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none">• Make a final check by re-using measurement instruments• Clean the part• Complete a control sheet• Complete and sign a conformity sheet• Communicate with the Workshop Manager if any issue occurs• Find a solution to correct the part, if possible• If not possible, find the origin of the issue in the strategy, and correct it• Deliver the part• Dismount tools, clamping, accessories• Clean the machine• Set the environment to its initial state, ready for next job	