MANUFACTURING AND ENGINEERING TECHNOLOGY Plastic Die Engineering

MEXICO

WorldSkills Occupational Standards



©WorldSkills International WSC2022_WSOS43_Plastic_Die_Engineering

RIL



WorldSkills Occupational Standards (WSOS)

General notes on the WSOS

The WSOS 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/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, and to the extent that it is able to. 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 that are set out in the Standards Specification. 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, provided that this does not distort the weightings assigned by the Standards.



WorldSkills Occupational Standards

Section	
Work organization and management	5
 The individual needs to know and understand: Legislation and best practice for health and safety in the working environment Range of tools and their proper use in relation to Plastic Die Engineering Technical language and symbols used in plastic engineering design The importance of effective communications and inter-personal working relationships The importance of a customer focused attitude Applied mathematics, technical terms, and symbols IT systems and related professional CAD/CAM software CNC Machining centres, bench working and moulding machines Manual and CAM programming Cutting tool technology The importance of accruing knowledge and skills The role of providing innovative and feasible solutions to design, manufacturing, and moulding problems 	
 The individual shall be able to: Effectively apply all current health and safety regulations in the workplace Proactively promote best practice in health and safety in the working environment Work independently on CNC machining centres Create manual and CAM programs for various types of machining Select suitable cutting parameters Select and set the most appropriate tools for the planned work Maintain all tools to ensure that they are in the best condition Communicate and collaborate effectively with colleagues, team members, and other professionals Engage with customers effectively, always prioritizing their needs Explain complex technical details to non-specialists Proactively engage in continuous professional development to promote excellence in the work and maintain expertise in current industrial practice Analyse the manufacturing feasibility Successfully apply mathematical principles to complex industrial scenarios Demonstrate high levels of critical thinking 	

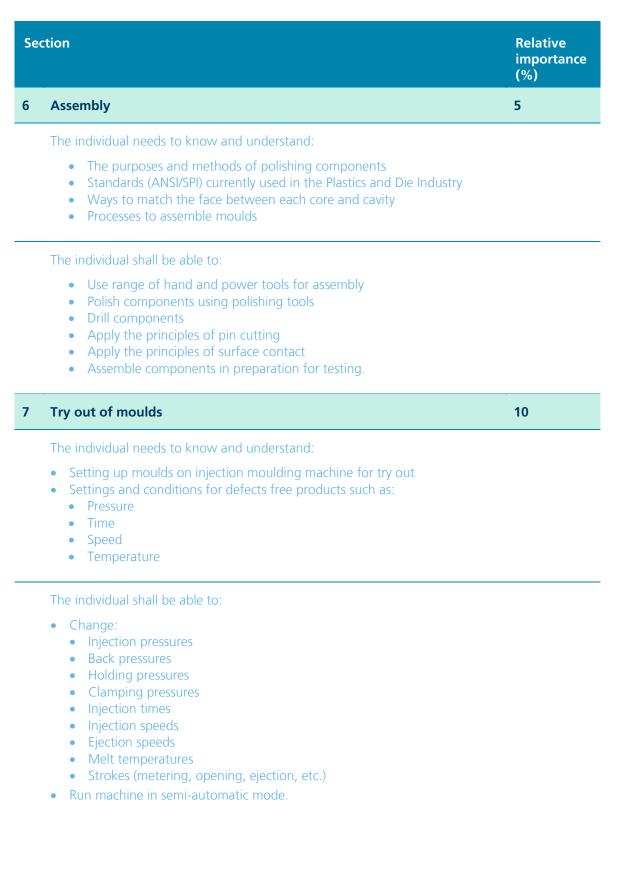


Section		Relative importance (%)
2	Interpretation of designs and drawings	10
	 The individual needs to know and understand: The principles of technical drawings Symbols and features of both 2D and 3D drawings Computer Aided Design (CAD) software Currently recognized international design standards (ISO, ASME) Geometric Dimensioning and tolerancing methods Quality requirements The purposes and roles of innovative solutions Design For manufacturing (DFM) concepts Design for Assembly (DFA) concepts, 	
3	 The individual shall be able to: Interpret technical drawings and specifications Identify critical features Analyze manufacturability with the available resources Identify and prepare for potential assembly issues if any Identify and prepare for any maintenance issues that may arise during production Specify stock to be kept for different operations Plan the production of parts according to specifications 	5
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	 The individual needs to know and understand: The importance of planning to improve efficiency Procedures to manufacture moulds with the available resources Machining operations and their sequences Method of clamping work pieces Choices of cutting tools and cutting parameters Machine and work piece setting Measuring tools and equipment Bench work and assembly techniques 	
	 The individual shall be able to: Identify and set different machining features Correctly clamp and set work pieces for machining or bench work Select correct cutting tools and machining strategies Make correct measurements 	

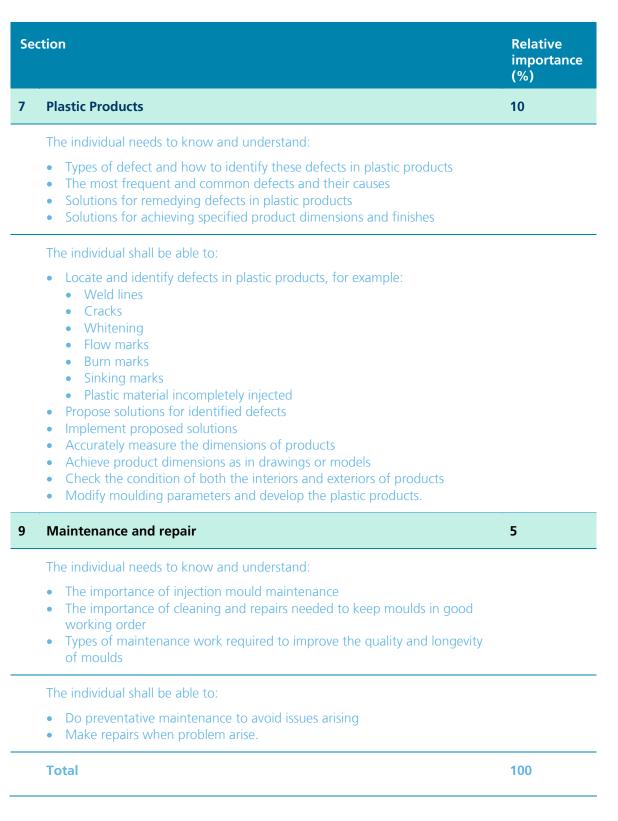


Section		Relative importance (%)
4	Programming and setting up equipment	20
	 The individual needs to know and understand: Programming in a logical sequence Different methods of programming (manual, Canned cycles, CAM etc.) Methods for transferring programs from computers to machine controllers in the case of CAM programming Methods for setting work pieces relative to machine co ordinates 	
	 The individual shall be able to: Select the best sequence for machining each specific work piece Program manually and in CAM software Transfer programs to machines Set work pieces and tools. 	
5	Machining	30
	 The individual needs to know and understand: The functions and features of Computer Aided Manufacturing (CAM) Settings for cutting conditions according to the mould material Settings for working procedures Settings for each piece of work and the way to measure it The importance of inspecting machines and tools 	
	 The individual shall be able to: Apply the principles and processes of Computer Aided Manufacturing (CAM) Set up and use machine centre input data into CNC machine controllers (tool offset, work offset, etc.) Create machining programs in software, and transfer to machine controllers Test the finished products and assess them for accuracy in accordance with the specified drawings Machine each part of the dies, taking account of each plastic product's requirements measure pieces of work accurately set offsets according to measured size achieve the required geometry and finish Fabricate all parts to commercial standards using: Machine centres Pin cut off grinders Drilling machines Bench grinders. 	











References for industry consultation

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

This WSOS appears to match most closely the occupation of Tool and Die Makers: <u>https://www.onetonline.org/link/summary/51-4111.00</u>

Adjacent occupations can also be explored through these links.

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 Shanghai 2021.

There were no responses to the request for feedback from industry and business.