



Plastics Product and Mould Designer (L3)

Curriculum/Syllabus

This program is aimed at training candidates for the job of a “**Plastics Product and Mould Designer (L3)**”, in the “**Petrochemical**” Sector and aims at building the following key competencies amongst the learner.

Program Name	Plastics Product and Mould Designer (L3)		
Qualification Document Name & Reference ID.	Plastics Product and Mould Designer (L3) CPC/Q 3103		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	Minimum Qualification – 8 th Standard /ITI Pass, Maximum Qualification – Diploma/Graduation		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Understanding product and its design • Selection criteria for Moulds and Dies on the base on the product quality, quantity, geometry and accuracy • Understand the other processing techniques for designing and fabricating the moulds and dies • Understanding & preparation of layout of Mould drawings • Able to decide suitable mould material, machining method for mould manufacturing. • Understanding of basic knowledge of mould manufacturing • Knowledge of mould assembly of moving parts, Part inspection. • Basic of Plastic materials, properties and its moulding processes for mould or die design. • Learning of computer and its operating system. Requirement, for Auto CAD software. Use of AutoCAD Software for preparation of mould drawings. Learning of AutoCAD software, its interface and commands for making various mould drawings. Up-keeping and maintenance of computer system. 		

This course encompasses **05** out of **05** Learning Outcome (LO) of “Plastics Product and Mould Designer (L3)” Qualification Document.

S. No	Topic/Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding LO Code	Equipment Required
01	Drafting technique and Engineering drawings	08	--	<ul style="list-style-type: none"> • Introduction to Engineering drawing • Drawing instruments & tools • Sizes of drawing sheets and its layout • Scaling • Line types • Lettering sizes and its types • Dimensioning types, rules and methods 	CPC/N3112	Projector for Power point Presentation, Computers, Charts, case studies drawing tools, drafter along with drafting board, etc
		--	16	<ul style="list-style-type: none"> • Orthographic projection 	CPC/N3114	



				<ul style="list-style-type: none"> • Projection of Solids – multi view projection, 1st & 3rd angle projection, pictorial view, isometric projection. • Benefits of using CAD software • Limits – Fits – Tolerances • Use of machine & drawing symbol • Method of representation of dimension with fits limits and tolerance. 		
02	Communication skills and personality development	08	12	<ul style="list-style-type: none"> • Need for communication • Introducing – greeting – addressing • Types of communication – verbal - non-verbal – written - talking on phone - • Speaking - asking questions - answering questions - • General attitude - time management skills – team work – body language - terminologies / technical terms on moulds and dies • Basic English grammar and parts of speech • Design improvement discussion and problem solving. 	CPC/N3104	Mock room/Class Room/Power Point Presentation
03	Basic health and safety at the workplace	-	20	<ul style="list-style-type: none"> • Health and safety • Fire safety • Emergencies • Maintenance of computer system • Safety precaution required during operation of computer 	CPC/N3106	Maintenance room/ Work place
04	Work shop calculation for Mould Design Calculations	08	24	<ul style="list-style-type: none"> • Basic shapes- units and numbers – Numerical computations – Profit and Loss and Discount, Units and numbers – angle and taper calculations 	CPC/N3112	Class Room/ Power Point Presentation Scale/Technical Drawing



				<ul style="list-style-type: none"> • Use of formula for volume, Area Pythagorean theorem for mechanical calculation • Conversion of actual lengths to typical technical drawing scale factors • Tabulations – bar graphs – pie charts – line graphs 		
05	Understanding of Computer system	08	08	<ul style="list-style-type: none"> • Basic of Computers • Devices available in computer • CPU • Memory - Storage Media • Input devices & Output devices • System Software • Application Software • Operating System 	CPC/N3112	Classroom/Power Point Presentation /Workstations along with Mouse and key Board
06	Understanding of Selection of plastic materials	08	12	<ul style="list-style-type: none"> • Introduction to plastics material • Advantages and limitation of plastic material • Types of plastic material - thermoplastic and thermo set 	CPC/N3112	Class room/Power Point Presentation/ Some of plastics Materials
07	Understanding of plastics product design and its requirement	24	--	<ul style="list-style-type: none"> • Introduction of product design and its general factors • Factors to be considered while designing plastic products • Factors requirement product design when conversion required from other foreign material to plastics • Design of ribs – boss – gussets - wall thickness – taper – fillet - moulded holes – hinges – clasps - snap fit - threads in plastics – metal inserts. 	CPC/N3112	Class room/Power Point Presentation/ Some of plastics article/products
08	Preparation and release of product design	--	16	<ul style="list-style-type: none"> • Preparation, approval and issue the drawing of product design 	CPC/N3114	



09	Fundamentals of mould and die design	24	--	<ul style="list-style-type: none"> • Introduction to mould design • Parts of mould • Design of feed system • Ejection system • Mould temperature control system • Two plate and three plate injection mould design • Single and multi impression mould design • Selection of moulding machines • Mould design for manufacturing • Mould material selection. 	CPC/N3112	Class room/Power Point Presentation/ Some of plastics article/products
10	Preparation and release of Mould/Die design	--	16	<ul style="list-style-type: none"> • Preparation, check & approval and issue the drawing of Mould/Die 	CPC/N3114	
11	Understanding of Processing Techniques for the Products	16	16	<ul style="list-style-type: none"> • Introduction to various plastics processing techniques and its application • Injection moulding - Injection moulding advantage and disadvantages and trouble shooting • Draw back in the plastic product during procedure and its solution 	CPC/N3112	Class room/Power Point Presentation/ Some of plastics article/products
12	Understanding manufacturing techniques for mould design and its cost estimation	16	24	<ul style="list-style-type: none"> • Introduction to Tool Selection • Defining raw material and finished part under Geometry Definition • Machining Methods 	CPC/N3112	Class room/Power Point Presentation/ Some of plastics article/products
13	Basic requirement of Auto CAD & preparation of drawing	24	--	<ul style="list-style-type: none"> • Definition & benefits of implementing CAD • Requirement of Auto CAD software • Use of setup method for a Drawing & use of units • Components of AutoCAD drawing field area • Use of Function keys & 	CPC/N3112	Class room/Power Point Presentation/ workstations alongwith AutoCAD software. Some of plastics



				<p>Mouse and Modes in AutoCAD</p> <ul style="list-style-type: none"> • Coordinate system in AutoCAD • Selection of units,, Coordinates & limits of sheet • Saving of Mechanical Drawing 		article/products
14	AUTOCAD commands USED FOR DRAFTING	--	112	<ul style="list-style-type: none"> • Selection of tool bar i.e Command ,Draw Tool ,Modify Tool ,Property Tool ,Inquiry Tool Bar & Other Feature • Methods of Dimensioning technique , style & its best location. • 2D drawing - Introduction to creation tools, editing tools, support tools 	CPC/N3114	Class room/Power Point Presentation/ workstations alongwith AutoCAD software.Some of plastics article/products
15	Professional drafting practices in the workplace	----	12	<ul style="list-style-type: none"> • Process and quality improvement discussions • Problem solving techniques planning, organising, initiative • Self management • Team development skills 	CPC/N3117	Class room/Power Point Presentation/ workstations alongwith AutoCAD software.
16	Mini project on mould and die design	--	48	<ul style="list-style-type: none"> • Complete mould design project: Making of core and cavity - Making mould parts models and drawing – Making of Mould assembly and its drawings for a commercial product. 	CPC/N3117	Class room/Power Point Presentation/ workstations alongwith AutoCAD software. article/products
	Total Hours	144	336			

Total Programme Duration: **480 Hours**