QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS INDUSTRY

Contents

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

Contact Us:
Capital Goods Skill Council
Federation House,
Tansen Marg,
New Delhi 110 001

Email:
inder.gahlaut@ficci.com

Introduction

Qualifications Pack- Tool and Die maker

SECTOR: CAPITAL GOODS

SUB-SECTOR:

1. Machine Tools Manufacturing
2. Power & Electrical Equipment Manufacturing
3. Process Plant Machinery Manufacturing
4. Textile Machinery Manufacturing
5. Plastic, Paper & Rubber Machinery Manufacturing
6. Light and Heavy Engineering Goods Manufacturing

OCCUPATION: Tool and Die Maker

REFERENCE ID: CSC/ Q 0104

Brief Job Description: The tool and die maker is responsible for identifying the sequence of machining operations required to fabricate tools by studying their designs, fabricating tool/ die components and assembling the components to create the designed tools.

Personal Attributes: This job requires the individual to be result oriented and positive in attitude.He should be comfortable in performing laborious work.The individual must be willing to work in the factory environment.

Qualifications Pack Code	CSC/ Q 0104		
Job Role	**Tool and Die Maker**		
Credits(NVEQF/NVQF/NSQF) [*OPTIONAL*]	TBD	**Version number**	1.0
Sector	Capital Goods	**Drafted on**	22/07/13
Sub-sector	1. Machine Tools Manufacturing 2. Power & Electrical Equipment Manufacturing 3. Process Plant Machinery Manufacturing 4. Textile Machinery Manufacturing 5. Plastic, Paper & Rubber Machinery Manufacturing 6. Light and Heavy Engineering Goods Manufacturing	**Last reviewed on**	24/07/13
Occupation	Tool and Die Maker	**Next review date**	08/08/14

Job Details

Job Role	Tool and die maker
Role Description	The tool and die maker is responsible for identifying the sequence of machining operations required to fabricate tools by studying their designs, fabricating tool/ die components and assembling the fabricated components to create the tools
NVEQF/NVQF level	4
Minimum Educational Qualifications*	Class XII
Maximum Educational Qualifications*	ITI/ Diploma/ Degree in Engineering or Technology
Training (Suggested but not mandatory)	Theoretical concepts, trainings on operation of machinery
Experience	In lieu of minimum qualification the employee has worked as a semi-skilled worker/trainee for minimum 6 months in the same role.
Applicable National Occupational Standards (NOS)	**Compulsory:** 1. CSC/ N0401 (**Plan and prepare for fabrication of tool and die components**) 2. CSC/ N0402 (**Perform fabrication activities**) 3. CSC/ N0403 (**Perform post - fabrication activities**) 4. CSC/ N0404 (**Assemble tool and die components**) 5. CSC/ N0405 (**Perform maintenance activities**) 6. CSC/ N5001 (**Carry out housekeeping**) 7. CSC/ N5002 (**Carry out reporting and documentation**) 8. CSC/ N5003 (**Carry out quality checks**) 9. CSC/ N5004 (**Carry out problem identification and escalation**) **Optional:** 10. NA
Performance Criteria	As described in the relevant OS units

Definitions

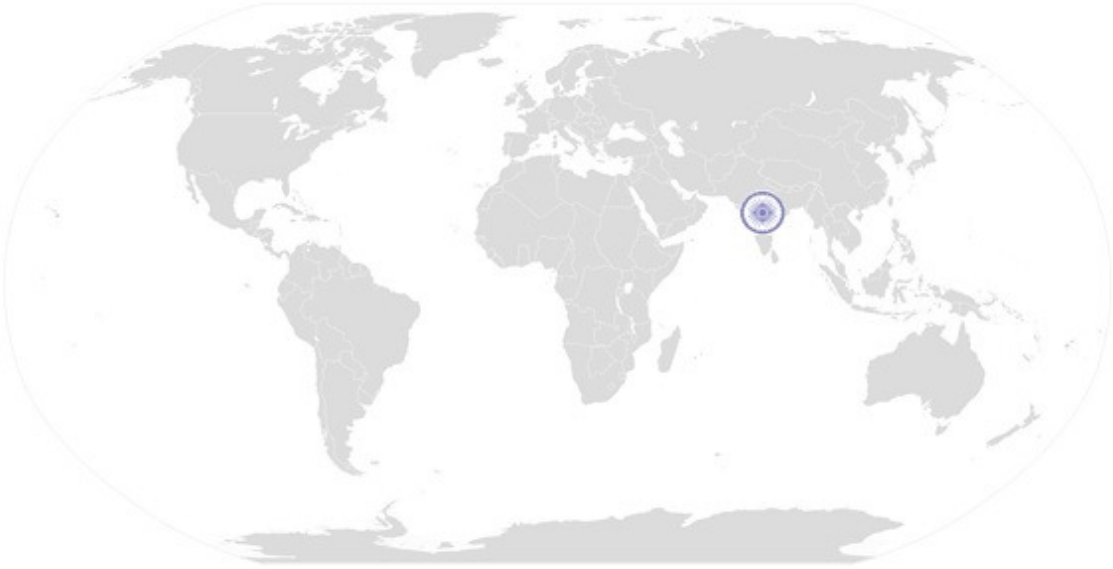
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Priority sub-sectors	Capital Goods Skill Council has identified following sub-sectors in capital goods sector as priority sub-sectors: Machine tools, Power & Electrical Equipment, Process & Plant machinery, Textile Machinery, Light and Heavy Engineering Goods, Plastic paper & Rubber machinery
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard , which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic	Core Skills or Generic Skills are a group of skills that are key to learning and

Skills	working in today's world. These skills are typically needed in any work environment. In the context of the OS , these include communication related skills that are applicable to most job roles.

Acronyms

Keywords /Terms	Description
CAD	Computer-aided design
CAM	Computer-aided manufacturing
OHS	Occupational Health & Safety
SOP	Standard Operating Procedure

National Occupational Standard



Overview

This unit is about understanding tool design and preparing the equipment and material for fabrication of tools and dies

National Occupational Standard

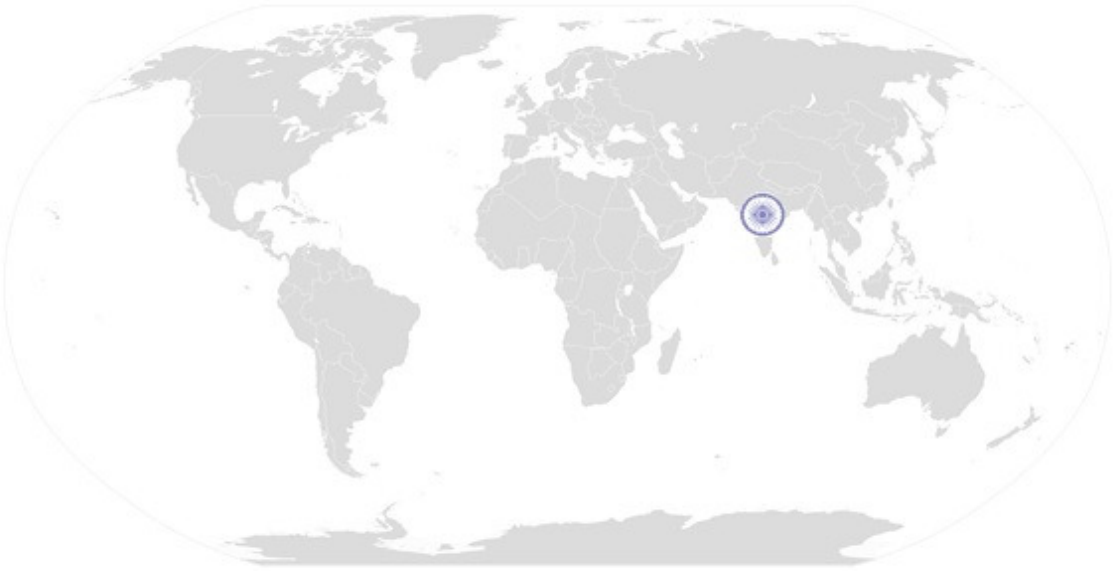
Unit Code	CSC / N 0401
Unit Title (Task)	**Plan and prepare for fabrication of tool and die components**
Description	This unit is about understanding tool design and preparing the equipment and material for fabrication of tools and dies
Scope	This unit/task covers the following: • Interpret the engineering drawing to understand the design requirements and sequence of operations • Prepare the fabrication/ machining equipment • Prepare material required during fabrication of tools and dies • Ensuring housekeeping and safety on the shoopfloor
Performance Criteria (PC) w.r.t. the Scope	
Element	**Criteria**
Understand design requirements	To be competent, the user/individual on the job must be able to PC1. Receive sample parts/ blueprints/ drawings of tools/ dies and other engineering information as per company procedures PC2. Analyze sample parts, engineering drawings and blueprints to plan sequence of operations for fabricating tools & dies PC3. Report and rectify cases of inappropriate information in design documents as per organizational procedures PC4. Compute dimensions, sizes, shapes and tolerances of sub-assemblies of the tools and dies based on specifications as per company procedures PC5. Identify and select machines for fabrication of tools & dies based on design and blueprints PC6. Identify and select tools for fabrication of tools & dies based on design and blueprints PC7. Identify and select lifting and rigging equipment based on design and blueprints PC8. Select appropriate metals to be used for fabricating tools & dies as per design requirements
Equipment readiness	PC9. Ensure that equipment is clean PC10. Ensure machines such as lathes, milling machines and grinders required during fabrication process are ready for operation PC11. Set parameters for conventional or computer numerically controlled machines as per design requirements PC12. Collect tools required during the fabrication process PC13. Ensure that tools match the desired specifications and are free from physical damage PC14. Ensure tools and attachments required during fabrication process are ready for operation PC15. Ensure the calibration status of all measuring equipments and instruments

	PC16. Ensure that no delays are caused as a result of improper preparation and failure to identify problems
Material appropriateness and preparation	PC17. Ensure that metal work pieces and other materials required for fabrication are in the correct quantity PC18. Ensure, by visual inspection, that work pieces are of desired quality (free of rust, type of metal, etc) PC19. Remove paint, grease, rust, or other contaminants from work piece PC20. Smoothen out the metal work piece prior to fabrication by grinding it PC21. Measure and mark metal work piece using instruments such as protractors, micrometers, scribes and rulers PC22. Ensure that no delays are caused as a result of improper preparation and failure to identify problems
Health & Safety	PC23. Ensure housekeeping and safety in work area PC24. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits PC25. Ensure use of mask during grinding to avoid inhaling the dust PC26. Ensure that the loose and torn clothes are not worn during working hours PC27. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury PC28. Adhere to all other safety norms (like wearing shoes, gloves, safety goggles etc) PC29. Ensure that unpermitted materials such as fuels, paints etc are removed from the work area PC30. Comply with health, safety, environment guidelines, regulations etc in accordance with organizational SOP PC31. Identify any potential health hazards or dangers and escalate to supervisor as per organizational SOP
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Implications of poorly prepared equipment, power failure etc KA2. Importance of identifying non-conforming material and storage of the same KA3. Risk and impact of not following defined procedures/work instructions KA4. Escalation matrix for reporting identified problems KA5. Types of documentation in organization and importance of the same KA6. Records to be maintained and implications of non-maintenance of the same KA7. Importance of housekeeping & good shopfloor practices (eg. 3S & 5S) KA8. Health, Safety and Environment guidelines, legislation and regulations applicable KA9. Personal protection(Which protective equipment to be used and how) KA10. Impact of poor practices on health, safety and environment KA11. Potential hazards and actions to minimize the same KA12. Escalation matrix and escalation procedure for reporting hazards

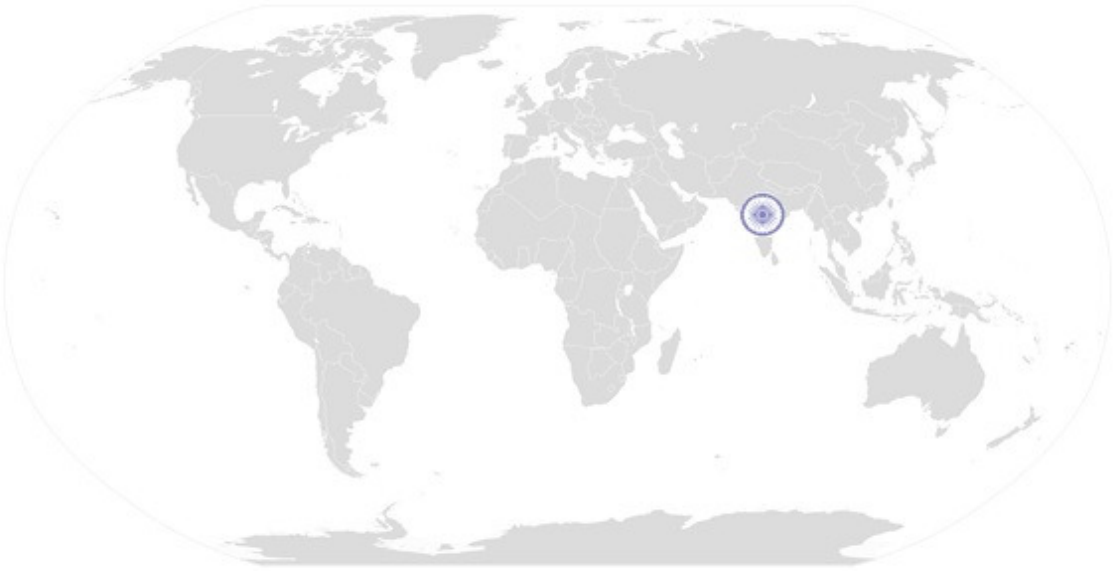
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Metal fabrication processes such as forging, rolling, extrusion, bending, spinning, drawing, drilling, sawing, boring, threading, grinding, cutting, etc KB2. Checks that need to be made to ensure that equipment is safe and ready to use (electrical connections, power return and earthing arrangements; equipment calibration, setting parameters) KB3. Operation of manual as well as CNC milling machines, lathes, grinders, laser and water cutting machines, wire electrical discharge machines, and other machine tools KB4. Machine operating parameters KB5. Engineering drawings and tools drawings KB6. Techniques of tool designing KB7. Basic welding and brazing techniques KB8. Metals and their properties KB9. CAD/CAM technology, CNC machine tools, and computerized measuring machines KB10. Implications of not adhering to sequence of activities and operations KB11. Implications of delays in preparation process KB12. Potential problems in preparation process KB13. Indicators and reasons of potential problems KB14. Appropriate solutions to the problems encountered KB15. Units of measurement KB16. Mathematics courses including algebra, geometry, calculus and trigonometry KB17. Basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes KB18. response to emergencies e.g. Power failures ,fire and system failures KB19. Use of different type of fire extinguishers
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and understand manuals, health and safety instructions, memos, reports, job cards etc

	SA6. Read and interpret engineering and tool drawings
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA7. Express statements, opinions or information clearly so that others can hear and understand SA8. Respond appropriately to any queries SA9. Communicate with supervisor SA10. Communicate with upstream and downstream teams SA11. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity
	The user/individual on the job needs to know and understand how to: SA12. Practice honesty with respect to company property and time SA13. Communicate with people in a form and manner and using language that is open and respectful SA14. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation
	The user/individual on the job needs to know and understand how to: SA15. Take responsibility for completing one's own work assignment SA16. Take initiative to enhance/learn skills in ones's area of work SA17. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA18. Is open to new ways of doing things SA19. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA20. Avoid absenteeism SA21. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA22. Work in disciplined factory environment SA23. Be punctual
B. Professional Skills	**Material and Equipment Handling**
	The user/individual on the job needs to know and understand how to: SB1. Handle different metal fabrication machines and tools wearing protective accessories SB2. Positioning work piece in machines according to design requirements SB3. Handling of various types of material handling equipment like forklifts, trolleys

	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Diagnose common problems in the machine based on visual inspection, sound , temperature etc SB5. Suggest improvements(if any) in process based on experience



National Occupational Standard



Overview

This unit is about performing tool fabrication activities

National Occupational Standard

Unit Code	CSC / N 0402
Unit Title (Task)	Perform fabrication activities
Description	This unit is about performing tool fabrication activities
Scope	This unit/task covers the following: • Availabiity of appropriat raw material • Fabrication of tools and dies using various machines, tools, etc • Ensuring housekeeping and safety on the shoopfloor
Performance Criteria (PC) w.r.t. the Scope	
Element	**Criteria**
Raw material appropriateness	To be competent, the user/individual on the job must be able to : PC1. Ensure, by visual inspection, that work pieces are of desired quality (free of rust, type of metal, etc.) PC2. Ensure that each material is in the correct quantity
Fabrication of Tools and Dies	PC3. Lift and secure work pieces on surface plates or worktables using hoists, vises, v-blocks or angle plates PC4. Perform sawing to cut work pieces to desired shapes and sizes PC5. Perform drilling to thread holes in work pieces as per design PC6. Place work pieces in the appropriate machine as per design requirement PC7. Operate conventional or computer numerically controlled machine tools such as lathes, milling machines and grinders to bore, grind or shape parts to prescribed dimensions and finishes PC8. Perform milling to fabricate parts according to precise sizes and shapes PC9. Match the quality of output to company's product requirements PC10. Meet production quantity targets set for the operation PC11. Follow work instructions as laid down by the company
Health & Safety	PC12. Ensure housekeeping and safety in work area PC13. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits PC14. Ensure use of mask during grinding to avoid inhaling the dust PC15. Ensure that the loose and torn clothes are not worn during working hours PC16. Ensure that he does not put his hand between moving parts of the equipment PC17. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury PC18. Adhere to all other safety norms (like wearing shoes, gloves, safety goggles etc) PC19. Remove unpermitted materials such as fuels, paints etc from the work area PC20. Comply with health, safety, environment guidelines, regulations etc in accordance with organizational SOP PC21. Identify any potential health hazards or dangers and escalate to supervisor as

	per organizational SOP
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Use of instruments to check dimensions etc KA2. Implications of poorly prepared material, power failure etc KA3. Material disposal procedure, importance of appropriate disposal of material and implications of not following the material disposal procedure KA4. Quality and damage checks to be done and importance of the same KA5. Risk and impact of not following defined procedures/work instructions KA6. Escalation matrix for reporting identified issues KA7. Types of documentation in organization and importance of the same KA8. Records to be maintained and implications of non-maintenance of the same KA9. Importance of housekeeping & good shopfloor practices (eg. 3S & 5S) KA10. Health, Safety and Environment guidelines, legislation and regulations as applicable KA11. Personal protection(Which protective equipment to be used and how) KA12. Impact of poor practices on health, safety and environment KA13. Potential hazards and actions to minimize the same KA14. Escalation matrix and escalation procedure for reporting hazards
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Metal fabrication processes such as forging, rolling, extrusion, bending, spinning, drawing, drilling, sawing, boring, threading, grinding, cutting, etc KB2. Checks that need to be made to ensure that equipment is safe and ready to use (electrical connections, power return and earthing arrangements; equipment calibration, setting parameters) KB3. Operation of manual as well as CNC milling machines, lathes, grinders, laser and water cutting machines, wire electrical discharge machines, and other machine tools KB4. Machine operating parameters KB5. Basic welding and brazing techniques KB6. Techniques of Tool designing KB7. Engineering drawings and tools drawings KB8. Metals and their properties KB9. CAD/CAM technology, CNC machine tools, and computerized measuring machines KB10. Implications of not adhering to sequence of activities and operations KB11. Implications of delays in preparation process KB12. Potential problems in preparation process KB13. Indicators and reasons of potential problems KB14. Appropriate solutions to the problems encountered KB15. Units of measurement KB16. Mathematics courses including algebra, geometry, calculus and trigonometry

	response to emergencies e.g. Power failures ,fire and system failures KB17. Basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes KB18. Use of different type of fire extinguishers
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and interpret engineering and tool drawings SA6. Read and understand manuals, health and safety instructions, memos, reports, job cards etc
	Oral Communication (Listening and Speaking skills)
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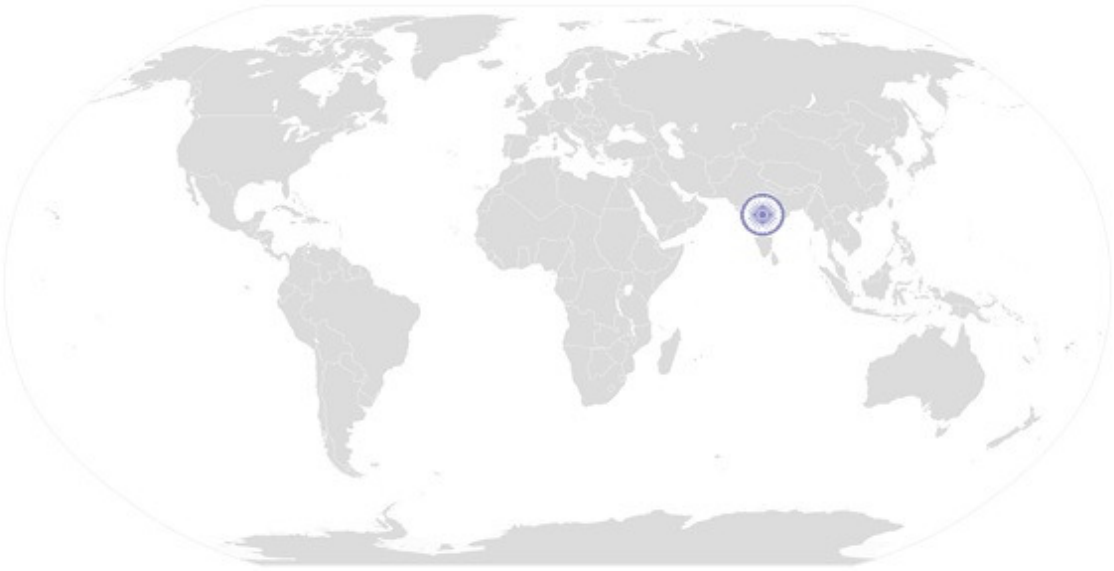
	Integrity
	The user/individual on the job needs to know and understand how to: SA12. Practice honesty with respect to company property and time SA13. Communicate with people in a form and manner and using language that is open and respectful SA14. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation
	The user/individual on the job needs to know and understand how to: SA15. Take responsibility for completing one's own work assignment SA16. Take initiative to enhance/learn skills in ones's area of work

	SA17. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA18. Is open to new ways of doing things SA19. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA20. Avoid absenteeism SA21. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA22. Work in disciplined factory environment SA23. Be punctual
B. Professional Skills	**Material and Equipment Handling**
	The user/individual on the job needs to know and understand how to: SB1. Handle different metal fabrication machines and tools wearing protective accessories SB2. Positioning work piece in machines according to design requirements SB3. Handling of various types of material handling equipment like forklifts, trolleys SB4. The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB5. Diagnose common problems in the machine based on visual inspection, sound , temperature etc SB6. Suggest improvements(if any) in process based on experience

National Occupational Standard



Overview

This unit is about performing post - fabrication activities

National Occupational Standard

Unit Code	CSC / N 0403
Unit Title (Task)	Perform post - fabrication activities
Description	This unit is about performing post - fabrication activities
Scope	This unit/task covers the following: • Inspection and Quality check of the fabricated work pieces • Safe disposable of waste material • Ensuring housekeeping and safety on the shoopfloor

Performance Criteria (PC) w.r.t. the Scope	
Element	**Criteria**
Inspection and Quality Check	To be competent, the user/individual on the job must be able to PC1. Follow work instructions as laid down by the company PC2. Ensure that equipment is put in a safe condition (shutdown or idle state) on completion of fabrication activities Remove the work pieces as per company procedure PC3. Inspect finished parts for smoothness, contour conformity and defects by visual inspection PC4. Verify dimensions, alignments and clearance of finished part for conformance to specifications PC5. Carry out final adjustment using File, grind, shim, etc
Waste disposal	PC6. Dispose off waste material as per waste disposal procedures laid down by the company PC7. Carry out disposal of waste material safely
Health & Safety	PC8. Ensure housekeeping and safety in work area PC9. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits PC10. Ensure use of mask during grinding to avoid inhaling the dust PC11. Ensure that the loose and torn clothes are not worn during working hours PC12. Ensure that he does not put his hand between moving parts of the equipment PC13. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury PC14. Adhere to all other safety norms (like wearing shoes, gloves, safety goggles etc) PC15. Ensure that unpermitted materials such as fuels, paints etc are removed from the work area PC16. Comply with health, safety, environment guidelines, regulations etc in accordance with organizational SOP PC17. Identify any potential health hazards or dangers and escalate to supervisor as per organizational SOP
Knowledge and Understanding (K)	

A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Use of instruments to check dimensions etc KA2. Implications of poorly prepared material, power failure etc KA3. Material disposal procedure, importance of appropriate disposal of material and implications of not following the material disposal procedure KA4. Quality and damage checks to be done and importance of the same KA5. Risk and impact of not following defined procedures/work instructions KA6. Escalation matrix for reporting identified issues KA7. Types of documentation in organization and importance of the same KA8. Records to be maintained and implications of non-maintenance of the same KA9. Importance of housekeeping & good shopfloor practices (eg. 3S & 5S) KA10. Health, Safety and Environment guidelines, legislation and regulations as applicable KA11. Personal protection(Which protective equipment to be used and how) KA12. Impact of poor practices on health, safety and environment KA13. Potential hazards and actions to minimize the same KA14. Escalation matrix and escalation procedure for reporting hazards
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Metal fabrication processes such as forging, rolling, extrusion, bending, spinning, drawing, drilling, sawing, boring, threading, grinding, cutting, etc KB2. Checks that need to be made to ensure that equipment is safe and ready to use (electrical connections, power return and earthing arrangements; equipment calibration, setting parameters) KB3. Operation of manual as well as CNC milling machines, lathes, grinders, laser and water cutting machines, wire electrical discharge machines, and other machine tools KB4. Procedures to check adherence to specifications and quality standards using equipment like verner caliper, screw gauge, etc KB5. Machine operating parameters KB6. Basic welding and brazing techniques KB7. Engineering drawings and tools drawings KB8. Techniques of tool designing KB9. Metals and their properties KB10. CAD/CAM technology, CNC machine tools, and computerized measuring machines KB11. Methods and importance of waste material disposal KB12. Implications of not adhering to sequence of activities and operations KB13. Implications of delays in preparation process KB14. Potential problems in preparation process KB15. Indicators and reasons of potential problems KB16. Appropriate solutions to the problems encountered KB17. Units of measurement

	KB18. Mathematics courses including algebra, geometry, calculus and trigonometry response to emergencies e.g. Power failures ,fire and system failures KB19. Basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes KB20. Use of different type of fire extinguishers
Skills (S)	
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	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and interpret engineering and tool drawings SA6. Read and understand manuals, health and safety instructions, memos, reports, job cards etc
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	Integrity
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	Motivation

	The user/individual on the job needs to know and understand how to: SA15. Take responsibility for completing one's own work assignment SA16. Take initiative to enhance/learn skills in ones's area of work SA17. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA18. Is open to new ways of doing things SA19. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
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B. Professional Skills	**Material and Equipment Handling**
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	Analytical Thinking
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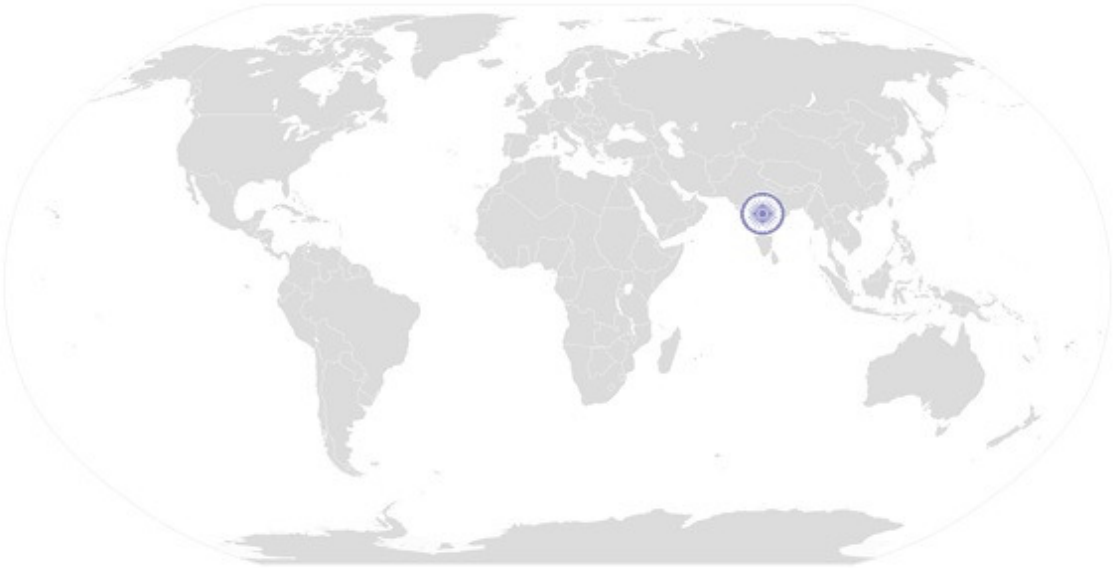
National Occupational Standard



Overview

This unit is about assembling and fitting various tool and die components post fabrication

National Occupational Standard

Unit Code	CSC / N 0404
Unit Title (Task)	**Assemble tool and die components**
Description	This unit is about assembling and fitting various tool and die components post fabrication
Scope	This unit/task covers the following: • Understand the design blue print and engineering drawing • Prepare tools and equipment for assembly • Prepare appropriate material • Assembling of tool and die components • Testing of assembled tool • Safe disposal of waste material • Ensuring housekeeping and safety on the shoopfloor

Performance Criteria (PC) w.r.t. the Scope	
Element	**Criteria**
Understanding design	To be competent, the user/individual on the job must be able to PC1. Understand assembly blueprints, engineering drawings and other specifications to identify the sequence of activities required to assemble the tool PC2. Read and interpret engineering drawings to ensure correct limits, tolerance and fits of equipment components PC3. Report and rectify cases of inappropriate information in design documents as per organizational procedures
Equipment readiness	PC4. Identify tools and equipment required to perform the assembling of tool components PC5. Collect tools required during the assembling process PC6. Ensure that tools match the desired specifications and are free from physical damage PC7. Ensure tools and equipment required for assembly are ready for operation PC8. Report damaged / defective components of equipment as per the escalation matrix PC9. Ensure the calibration status of all measuring equipment and instruments PC10. Prepare the foundation base as per the job requirements i.e. cleaning using hand files, scraper, etc PC11. Use braces, jacks, clamps, ropes or bolt straps to hold parts in position
Material appropriateness and preparation	PC12. Collect work pieces/ components to be assembled PC13. Ensure that each material is in the correct quantity PC14. Ensure, by visual inspection, that work pieces are of desired quality (free of rust, type of metal, etc) PC15. Remove paint, grease, rust, or other contaminants from work pieces

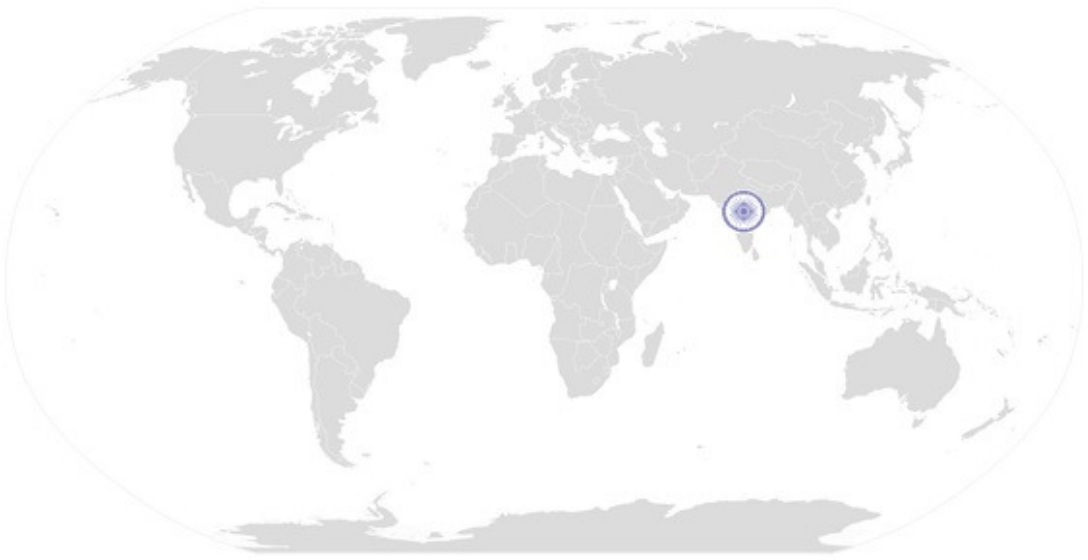
	PC16. Remove rough spots from work piece using portable grinder, hand file, or scraper PC17. Ensure polishing and smoothness of the die components as per the requirement and specifications PC18. Ensure that no delays are caused as a result of improper preparation and failure to identify problems
Assembling operation	PC19. Perform die matching to ensure conformance to specifications PC20. Use handling equipment such as hoist or crane or manual methods for lifting and moving the mechanical components PC21. Use file, chisel and grind parts to align or level the components to be assembled as per the design/ manufacturers' specifications PC22. Demonstrate use of machinery such as powered saws, hand shears or chipping knife to cut or bore holes in the structure PC23. Demonstrate use of tools such as saws, cutting torches, pipe threaders or benders to cut, thread or bend parts as per the specifications PC24. Fasten parts together using welding and brazing as per design PC25. Fasten mechanical components/ subassemblies together using screws, bolts, and collars using hand/ power tools PC26. Set and adjust linkages, tensions and clearances of assembled components to specifications using fixed gauges and hand tools
Testing of assembled tool	PC27. Connect the tool/ die in its respective machine PC28. Add lubricants and coolants into moving parts as per specifications PC29. Carry out functional test of assembled machine to ensure manufactured tools and dies perform as per desired performance criteria PC30. Identify and rectify the problem areas during the functional tests
Material disposal	PC31. Dispose off waste material as per waste disposal procedures laid down by the company PC32. Carry out disposal of waste material safely
Health & Safety	PC33. Ensure housekeeping and safety in work area PC34. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits PC35. Ensure use of mask during grinding to avoid inhaling the dust PC36. Ensure that the loose and torn clothes are not worn during working hours PC37. Ensure that he does not put his hand between moving parts PC38. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury PC39. Adhere to all other safety norms (like wearing shoes, gloves, safety goggles etc) PC40. Ensure that unpermitted materials such as fuels, paints etc are removed from the work area PC41. Comply with health, safety, environment guidelines, regulations etc in accordance with organizational SOP PC42. Identify any potential health hazards or dangers and escalate to supervisor as

	per organizational SOP
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Use of instruments to check dimensions etc KA2. Implications of poorly prepared material, power failure etc KA3. Material disposal procedure, importance of appropriate disposal of material and implications of not following the material disposal procedure KA4. Quality and damage checks to be done and importance of the same KA5. Risk and impact of not following defined procedures/work instructions KA6. Escalation matrix for reporting identified issues KA7. Types of documentation in organization and importance of the same KA8. Records to be maintained and implications of non-maintenance of the same KA9. Importance of housekeeping & good shopfloor practices (eg. 3S & 5S) KA10. Health, Safety and Environment guidelines, legislation and regulations as applicable KA11. Personal protection(Which protective equipment to be used and how) KA12. Impact of poor practices on health, safety and environment KA13. Potential hazards and actions to minimize the same KA14. Escalation matrix and escalation procedure for reporting hazards
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Engineering drawings and tools drawings KB2. Steps required to assemble/ dis-assemble an equipment with a given design KB3. Metals and their properties KB4. Tool designing KB5. Limits, fits and tolerances KB6. Metallurgical and metal working processes such as heat treatment, hardening, etc KB7. Assembling techniques such as aligning, bending, fixing, mechanical jointing, threaded jointing, sealing and torquing KB8. Procedures to check adherence to specifications and quality standards using equipment like verner caliper, screw gauge, etc KB9. Understanding of normal running characteristics of tools and dies KB10. Possible causes of common problems during tool and die assembly & their remedies KB11. Basic welding and brazing techniques KB12. Checks that need to be made to ensure that equipment is safe and ready to use (electrical connections, power return and earthing arrangements; equipment calibration, setting parameters) KB13. Implications of not adhering to sequence of activities and operations

	KB14. Units of measurement KB15. Mathematics courses including algebra, geometry, calculus and trigonometry response to emergencies e.g. Power failures ,fire and system failures KB16. Basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and interpret engineering and tool drawings SA6. Read and understand manuals, health and safety instructions, memos, reports, job cards etc
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA7. Express statements, opinions or information clearly so that others can hear and understand SA8. Respond appropriately to any queries SA9. Communicate with supervisor SA10. Communicate with upstream and downstream teams SA11. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity
	The user/individual on the job needs to know and understand how to: SA12. Practice honesty with respect to company property and time SA13. Communicate with people in a form and manner and using language that is open and respectful SA14. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation

	The user/individual on the job needs to know and understand how to: SA15. Take responsibility for completing one's own work assignment SA16. Take initiative to enhance/learn skills in ones's area of work SA17. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA18. Is open to new ways of doing things SA19. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA20. Avoid absenteeism SA21. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA22. Work in disciplined factory environment SA23. Be punctual
B. Professional Skills	**Material and Equipment Handling**
	The user/individual on the job needs to know and understand how to: SB1. Handle different machines and tools wearing protective accessories SB2. Positioning work piece in machines according to design requirements SB3. Handling of various types of material handling equipment like forklifts, trolleys SB4. The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB5. Diagnose common problems in the tools based on visual inspection, sound, temperature etc SB6. Suggest improvements(if any) in process based on experience

National Occupational Standard



Overview

This unit is about performing maintenance of equipments used for tool and die fabrication

National Occupational Standard

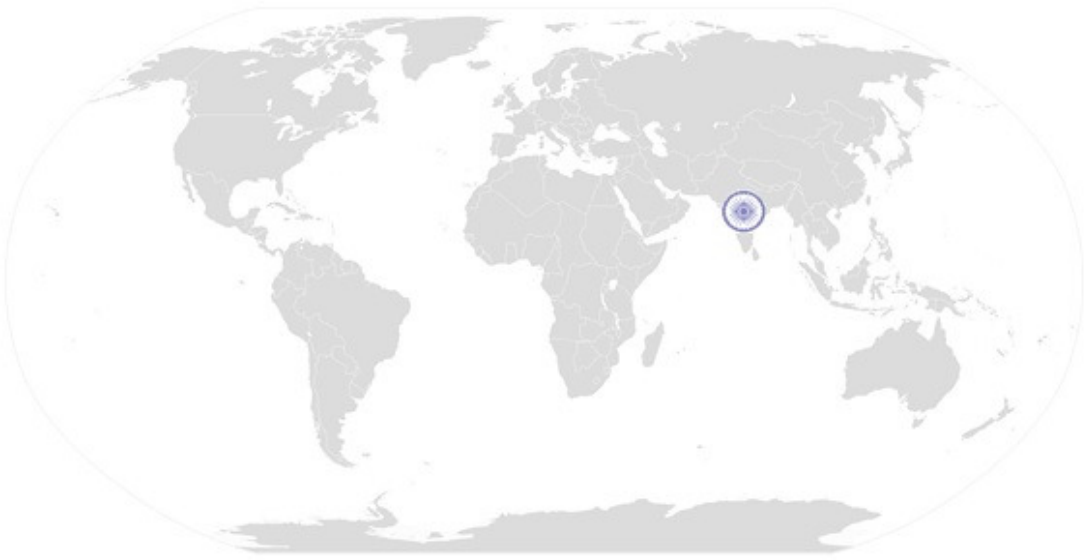
Unit Code	CSC / N 0405
Unit Title (Task)	Perform maintenance activities
Description	This unit is about performing maintenance of equipments used for tool and die fabrication
Scope	This unit/task covers the following: • Perform preventive maintenance of machines • Ensuring housekeeping and safety on the shoopfloor

Performance Criteria (PC) w.r.t. the Scope	
Element	**Criteria**
Perform preventive maintenance	To be competent, the user/individual on the job must be able to PC1. Clean and maintain machines, tools and equipment used in tool fabrication to remove grease, rust, stains, and foreign matter PC2. Observe and identifyareas of malfunctioning based on visual inspection, sound, etc. PC3. Determine need for adjustment or repair PC4. Select necessary inspection tools as per the job requirements PC5. Inspect condition of lubricants of machine in accordance with workplace procedures PC6. Make minor adjustment and alignments on loose bolts, belts, drive slacks, guards and covers PC7. Replace worn/faulty components or equipment PC8. Record all work done and report to supervisor in accordance with the company procedures
Health & Safety	PC9. Ensure housekeeping and safety in work area PC10. Ensure that the exhaust systems are used to maintain the concentration levels of various particulate matters remain within limits PC11. Ensure use of mask during grinding to avoid inhaling the dust PC12. Ensure that the loose and torn clothes are not worn during working hours PC13. Ensure that he does not put his hand between moving parts PC14. Ensure using hoist or forklift for lifting heavy materials to avoid physical injury PC15. Adhere to all other safety norms (like wearing shoes, gloves, safety goggles etc) PC16. Ensure that unpermitted materials such as fuels, paints etc are removed from the work area PC17. Comply with health, safety, environment guidelines, regulations etc in accordance with organizational SOP PC18. Identify any potential health hazards or dangers and escalate to supervisor as

	per organizational SOP
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Checks to be done during preventive maintenance and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues KA4. Types of documentation in organization and importance of the same KA5. Records to be maintained and implications of non-maintenance of the same KA6. Importance of housekeeping & good shopfloor practices (eg. 3S & 5S) KA7. Health, Safety and Environment guidelines, legislation and regulations as applicable KA8. Personal protection(Which protective equipment to be used and how) KA9. Impact of poor practices on health, safety and environment KA10. Potential hazards and actions to minimize the same KA11. Escalation matrix and escalation procedure for reporting hazards
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Engineering drawings and tools drawings KB2. Steps required to assemble/ dis-assemble an equipment with a given design KB3. Use of equipment such as thermometer, tachometer and vibration monitoring tools to perform preventive maintenance KB4. Understanding of normal running characteristics of machines KB5. Basic troubleshooting of machines KB6. Potential problems with machines, their causes and remedies KB7. Impact of poor practices on health, safety and environment KB8. Response to emergencies e.g. Power failures ,fire and system failures
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills** The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes **Reading and Understanding Skills** The user/individual on the job needs to know and understand how to: SA5. Read and interpret engineering and tool drawings SA6. Read and understand manuals, health and safety instructions, memos, reports,

	job cards etc
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA7. Express statements, opinions or information clearly so that others can hear and understand SA8. Respond appropriately to any queries SA9. Communicate with supervisor SA10. Communicate with upstream and downstream teams SA11. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity
	The user/individual on the job needs to know and understand how to: SA12. Practice honesty with respect to company property and time SA13. Communicate with people in a form and manner and using language that is open and respectful SA14. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation
	The user/individual on the job needs to know and understand how to: SA15. Take responsibility for completing one's own work assignment SA16. Take initiative to enhance/learn skills in ones's area of work SA17. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA18. Is open to new ways of doing things SA19. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA20. Avoid absenteeism SA21. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA22. Work in disciplined factory environment SA23. Be punctual
B. Professional Skills	**Material and Equipment Handling**
	The user/individual on the job needs to know and understand how to: SB1. Handle different machines and tools wearing protective accessories SB2. Handling of various types of material handling equipment like forklifts, trolleys SB3. The capacity to apply technology, combining the physical and sensory skills

	needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems SB4. Open, check and observe operating machines or equipment to diagnose machine malfunction
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB5. Diagnose common problems in the tools based on visual inspection, sound, temperature etc SB6. Suggest improvements(if any) in process based on experience



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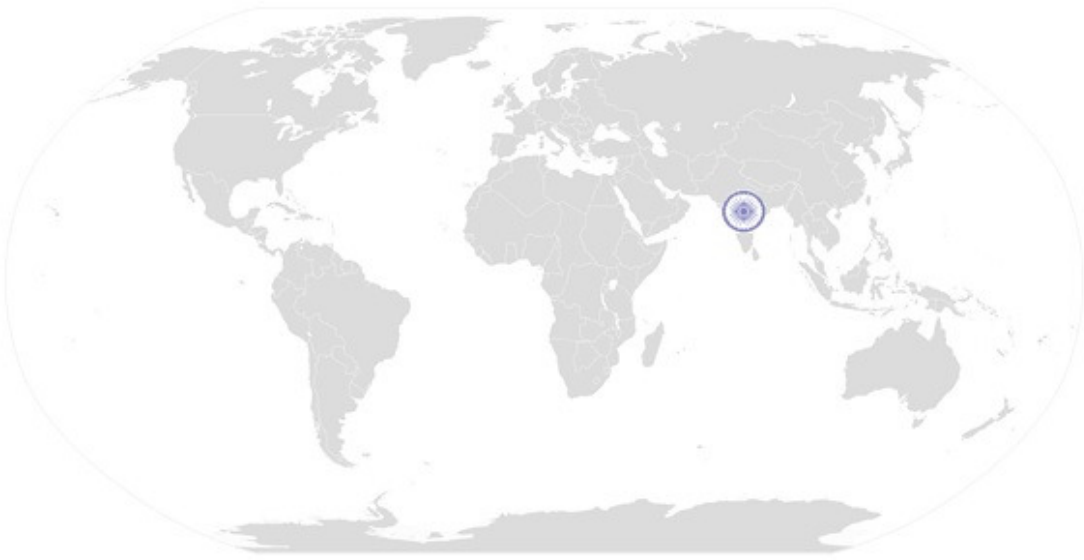


Overview

This unit is about carrying out housekeeping

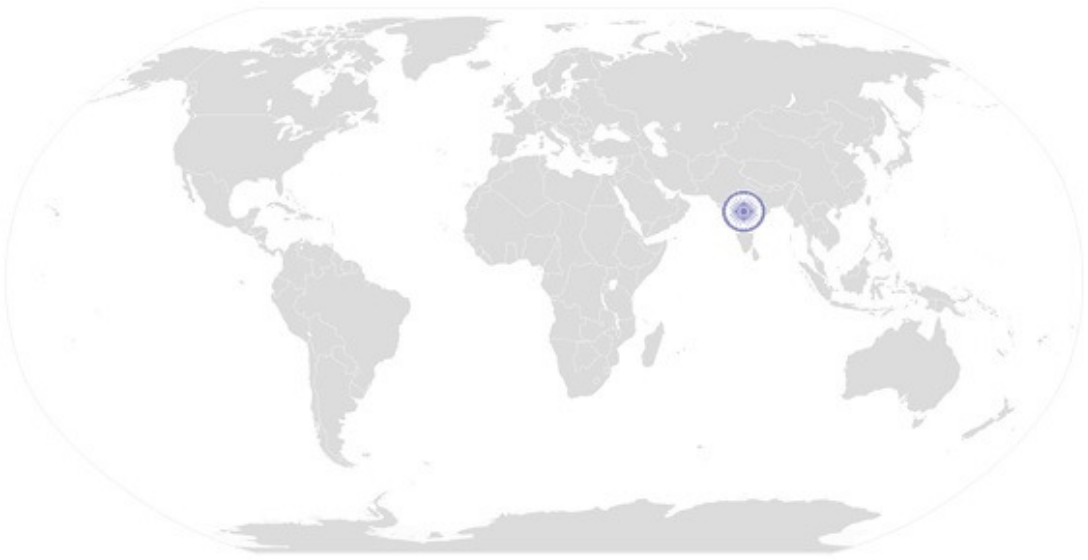
National Occupational Standard

Unit Code	CSC / N 5001
Unit Title (Task)	Carry out housekeeping
Description	This unit is about carrying out housekeeping activities
Scope	This unit/task covers the following: • Preparing for housekeeping activities • Carry out housekeeping activities • Post housekeeping activities
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Pre housekeeping activities	To be competent, the user/individual on the job must be able to: PC1. Inspect the area while taking into account various surfaces PC2. Identify the material requirements for cleaning the areas inspected, by considering risk, time, efficiency and type of stain PC3. Ensure that the cleaning equipment is in proper working condition PC4. Select the suitable alternatives for cleaning the areas in case the appropriate equipment and materials are not available and inform the appropriate person PC5. Plan the sequence for cleaning the area to avoid re-soiling clean areas and surfaces PC6. Inform the affected people about the cleaning activity PC7. Display the appropriate signage for the work being conducted PC8. Ensure that there is adequate ventilation for the work being carried out PC9. Wear the personal protective equipment required for the cleaning method and materials being used
Operations	PC10. Use the correct cleaning method for the work area, type of soiling and surface PC11. Carry out cleaning activity without disturbing others PC12. Deal with accidental damage, if any, caused while carrying out the work PC13. Report to the appropriate person any difficulties in carrying out your work PC14. Identify and report to the appropriate person any additional cleaning required that is outside one's responsibility or skill
Post housekeeping activities	PC15. Ensure that there is no oily substance on the floor to avoid slippage PC16. Ensure that no scrap material is lying around PC17. Maintain and store housekeeping equipment and supplies PC18. Follow workplace procedures to deal with any accidental damage caused during the cleaning process PC19. Ensure that, on completion of the work, the area is left clean and dry and meets requirements

	PC20. Return the equipment, materials and personal protective equipment that were used to the right places making sure they are clean, safe and securely stored PC21. Dispose the waste garnered from the activity in an appropriate manner PC22. Dispose of used and un-used solutions according to manufacturer's instructions, and clean the equipment thoroughly
General	PC23. Maintain schedules and records for housekeeping duty PC24. Replenish any necessary supplies or consumables
Knowledge and Understanding (K)	
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. The levels of hygiene required by workplace and why it is important to maintain them during your work KB2. How to inspect a work area to decide what cleaning it needs KB3. Methods and materials that used for cleaning variety of surfaces KB4. The types of cleansing agents that are not to be mixed together KB5. The correct method for cleaning equipment and/or machinery used during your work KB6. The importance of personal protective equipment KB7. Appropriate personal protective equipment for the work area,cleaning equipment, tools, materials and chemicals used KB8. The correct sequence for cleaning the work area KB9. The time taken by the treatment to work KB10. The importance of following manufacturer's instructions on cleaning agents KB11. The most appropriate place to carry out test cleans and why this should be done before applying treatments KB12. The importance of applying treatments evenly and the effect of not doing this KB13. Process of cleaning the surfaces without causing injury or damage KB14. The method to check the treated surface and equipment on completion of cleaning KB15. Procedures for reporting any unidentified soiling KB16. Procedures for disposing off waste KB17. Procedures for disposing off or storing personal protective equipment KB18. Escalation procedures for soils or stains that could not be removed
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills** The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic

	mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and understand manuals, health and safety instructions, memos, reports, job cards etc SA6. Read images, graphs, diagrams SA7. Understand the various coding systems as per company norms
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. Express statements, opinions or information clearly so that others can hear and understand SA9. Respond appropriately to any queries SA10. Communicate with supervisor SA11. Communicate with upstream and downstream teams SA12. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity
	The user/individual on the job needs to know and understand how to: SA13. Practice honesty with respect to company property and time SA14. Communicate with people in a form and manner and using language that is open and respectful SA15. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation
	The user/individual on the job needs to know and understand how to: SA16. Take responsibility for completing one's own work assignment SA17. Take initiative to enhance/learn skills in ones's area of work SA18. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA19. Is open to new ways of doing things SA20. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA21. Avoid absenteeism SA22. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA23. Work in disciplined factory environment

	SA24. Be punctual



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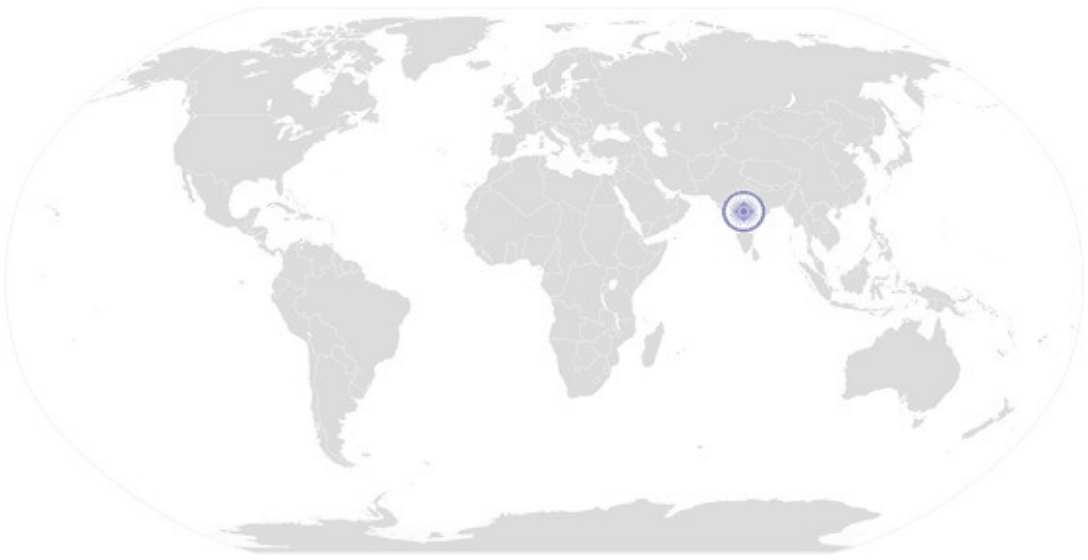


Overview

This unit is about reporting and documentation

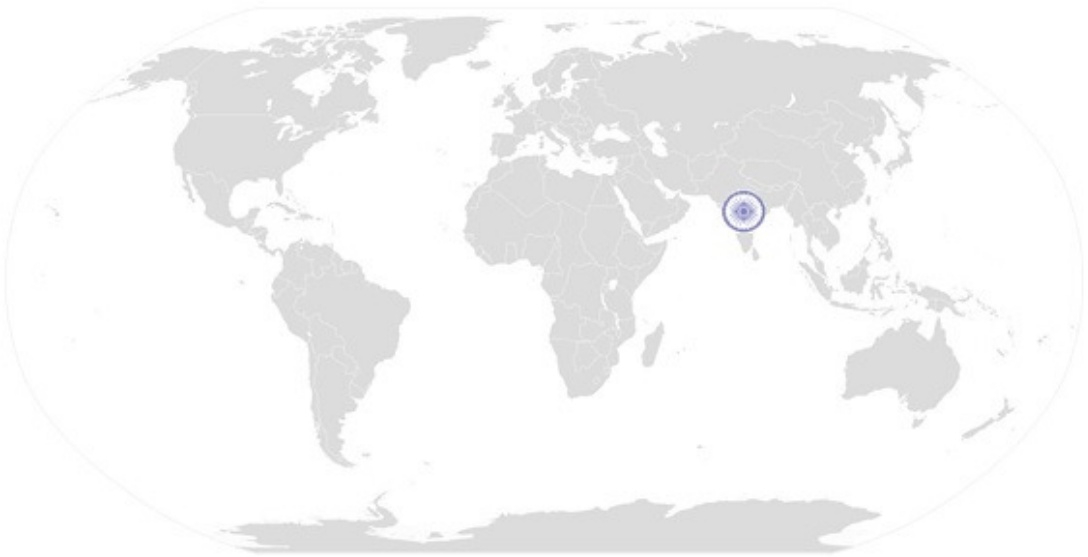
National Occupational Standard

Unit Code	CSC / N 5002
Unit Title (Task)	Carry out reporting and documentation
Description	This unit is about carrying out reporting and documentation
Scope	This unit/task covers the following: • Reporting of data/problem/incidents etc • Documentation • Information Security
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Reporting	To be competent, the user/individual on the job must be able to: PC1. Report data/problems/incidents as applicable in a timely manner PC2. Report to the appropriate authority as laid down by the company PC3. Follow reporting procedures as prescribed by the company
Recording and Documentation	PC4. Identify documentation to be completed relating to one's role PC5. Record details accurately an appropriate format PC6. Complete all documentation within stipulated time according to company procedure PC7. Ensure that the final document meets with the requirements of the persons who requested it or make any amendments accordingly PC8. Make sure documents are available to all appropriate authorities to inspect
Information Security	PC9. Respond to requests for information in an appropriate manner whilst following organizational procedures PC10. Inform the appropriate authority of requests for information received
Knowledge and Understanding (K)	
B. Technical knowledge	The user/individual on the job needs to know and understand: KB1. Different methods of recording information KB2. Various documents that need to be maintained KB3. Company procedure for filling/maintaining up the documents KB4. Procedures for reporting to the appropriate authority KB5. Procedures for recording damage, breakages etc KB6. Reporting incidents where standard operating procedures are not followed KB7. The importance of complete and accurate documentation KB8. How to maintain complete documentation accurately and within agreed timescales KB9. The importance of ensuring that the documents are correct KB10. The actions to be taken if the documents are not correct KB11. The importance of maintaining the security and confidentiality of recorded

	information KB12. Procedures to maintain confidentiality of information KB13. The appropriate method for responding to requests for information KB14. The reporting procedures to followed before disclosing information to any outside party
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and understand manuals, health and safety instructions, memos, reports, job cards etc SA6. Read images, graphs, diagrams SA7. Understand the various coding systems as per company norms
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. Express statements, opinions or information clearly so that others can hear and understand SA9. Respond appropriately to any queries SA10. Communicate with supervisor SA11. Communicate with upstream and downstream teams SA12. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity
	The user/individual on the job needs to know and understand how to: SA13. Practice honesty with respect to company property and time SA14. Communicate with people in a form and manner and using language that is open and respectful SA15. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation

	The user/individual on the job needs to know and understand how to: SA16. Take responsibility for completing one's own work assignment SA17. Take initiative to enhance/learn skills in ones's area of work SA18. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA19. Is open to new ways of doing things SA20. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA21. Avoid absenteeism SA22. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA23. Work in disciplined factory environment SA24. Be punctual

National Occupational Standard



Overview

This unit is about carrying out quality checks

National Occupational Standard

Unit Code	CSC / N 5003
Unit Title (Task)	Carry out quality checks
Description	This unit is about carrying out quality control activities
Scope	This unit/task covers the following: • Carrying out quality checks to identify problems • Take corrective actions • Reporting the results
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Inspection	To be competent, the user/individual on the job must be able to: PC1. Ensure that total range of checks are regularly and consistently performed PC2. Use appropriate measuring instruments, equipment, tools, accessories etc ,as required
Analysis	PC3. Identify non-conformities to quality assurance standards PC4. Identify potential causes of non-conformities to quality assurance standards PC5. Identify impact on final product due to non-conformance to company standards PC6. Evaluating the need for action to ensure that problems do not recur PC7. Suggest corrective action to address problem PC8. Review effectiveness of corrective action
Reporting	PC9. Interpret the results of the operator level quality check correctly PC10. Inform any non-conformity to the appropriate authority with in the stipulated time. PC11. Record of results of action taken PC12. Record adjustments not covered by established procedures for future reference PC13. Review effectiveness of action taken PC14. Follow reporting procedures where the cause of defect cannot be identified
Knowledge and Understanding (K)	
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. The importance of quality control procedures KB2. Relevance and importance of activities and how they contribute to the achievement of the quality objectives, KB3. Proper procedure for selecting the material/product and performing quality checks without affecting the material

	KB4. Availability of work instructions, as necessary, KB5. Characteristics of the product/material KB6. Use of suitable equipment KB7. Availability and use of monitoring and measuring devices, KB8. Requirements of records KB9. Importance of maintaining accurate up-to-date records KB10. The need to report within the stipulated time KB11. Implications of inaccurate measuring and testing instruments and equipment KB12. The cost of non-conformance to quality standards KB13. Implications (impact on internal/external customers) of defective products, materials or components
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills
	The user/individual on the job needs to know and understand how to: SA5. Read and understand manuals, health and safety instructions, memos, reports, job cards etc SA6. Read images, graphs, diagrams SA7. Understand the various coding systems as per company norms
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. Express statements, opinions or information clearly so that others can hear and understand SA9. Respond appropriately to any queries SA10. Communicate with supervisor SA11. Communicate with upstream and downstream teams SA12. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity

	The user/individual on the job needs to know and understand how to: SA13. Practice honesty with respect to company property and time SA14. Communicate with people in a form and manner and using language that is open and respectful SA15. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation
	The user/individual on the job needs to know and understand how to: SA16. Take responsibility for completing one's own work assignment SA17. Take initiative to enhance/learn skills in ones's area of work SA18. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA19. Is open to new ways of doing things SA20. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA21. Avoid absenteeism SA22. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA23. Work in disciplined factory environment SA24. Be punctual

National Occupational Standard

Overview

This unit is about problem identification and escalation

National Occupational Standard

Unit Code	CSC / N 5004
Unit Title (Task)	**Carry out problem identification and escalation**
Description	This unit is about problem identification and escalation
Scope	This unit/task covers the following: • Identify problems across: - Materials - Products - Equipment - Others • Identify solutions to problems • Take corrective action • Escalation of unresolved identified problems
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Problem Identification	To be competent, the user/individual on the job must be able to: PC1. Identify defects/indicators of problems PC2. Identify any wrong practices that may lead to problems PC3. Identify practices that may impact the final product quality PC4. Identify if the problem has occurred before PC5. Identify other operations that might be impacted by the problem PC6. Ensure that no delays are caused as a result of failure to escalate problems
Necessary Action	PC7. Take appropriate materials and sample for conducting tests PC8. Evaluate results to establish reasons to confirm suspected reasons for non-conformance (where required) PC9. Consider possible reasons for identification of problems PC10. Consider applicable corrections and formulate corrective action PC11. Formulate action in a timely manner PC12. Communicate problem/remedial action to appropriate parties PC13. Take corrective action in a timely manner PC14. Report/document problem and corrective action in an appropriate manner PC15. Monitor corrective action PC16. Evaluate implementation of corrective action taken to determine if the problem has been resolved PC17. Ensure that corrective action selected is viable and practical PC18. Ensure that correct solution is identified to an identified problem PC19. Take corrective action for problems identified according to the company procedures

	PC20. Ensure that no delays are caused as a result of failure to take necessary action
Problem Escalation	PC21. Escalate problem as per laid down escalation matrix PC22. Escalate the problem within stipulated time PC23. Escalate the problem in an appropriate manner PC24. Ensure that no delays are caused as a result of failure to escalate problems
Knowledge and Understanding (K)	
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Indicators of problems KB2. The working of the equipment and accessories(if applicable) KB3. The impact of operations on the user and equipment(if applicable) KB4. The impact of operations on the final product (if applicable) KB5. The effect of not rectifying the problems identified KB6. The reason for the occurrence of previous problems KB7. Measures and steps that have been taken to address the previous problems KB8. Possible solutions for various problems KB9. The correct method for carrying out corrective actions outlined for each problem KB10. The impact of not carrying out the corrective actions KB11. The documentation procedure for recording such problems, as per company norms KB12. The escalation matrix for reporting problems KB13. Escalation matrix for reporting unresolved problems KB14. The time frame within which in which each problem needs to be escalated KB15. Manner in which each problem needs to be escalated
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills** The user/ individual on the job needs to know and understand how to: SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company SA3. Write simple letters, mails, etc SA4. Perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
	Reading and Understanding Skills The user/individual on the job needs to know and understand how to: SA5. Read and understand manuals, health and safety instructions, memos, reports, job cards etc

	SA6. Read images, graphs, diagrams SA7. Understand the various coding systems as per company norms
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA8. Express statements, opinions or information clearly so that others can hear and understand SA9. Respond appropriately to any queries SA10. Communicate with supervisor SA11. Communicate with upstream and downstream teams SA12. Work in a team and other behavioral skills required to support the small group activities (Quality Circle, Cross Functional Team, Suggestion Scheme)
	Integrity
	The user/individual on the job needs to know and understand how to: SA13. Practice honesty with respect to company property and time SA14. Communicate with people in a form and manner and using language that is open and respectful SA15. Resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
	Motivation
	The user/individual on the job needs to know and understand how to: SA16. Take responsibility for completing one's own work assignment SA17. Take initiative to enhance/learn skills in ones's area of work SA18. The capacity to learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse one's learning. SA19. Is open to new ways of doing things SA20. The capacity to envisage and articulate personal goals; to develop strategies and take action to achieve them.
	Reliability
	The user/individual on the job needs to know and understand how to: SA21. Avoid absenteeism SA22. Act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations SA23. Maintain high degree of discipline in the factory SA24. Be punctual