

## QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS INDUSTRY

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### 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

### Introduction

#### Qualifications Pack: Calibration Technician

**SECTOR:** CAPITAL GOODS

**SUB-SECTOR:**

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| 1. Machine Tools                   | 5. Process Plant Machinery        |
| 2. Tools Dies and Press Tools      | 6. Electrical and Power Machinery |
| 3. Plastic Manufacturing Machinery | 7. Light Engineering Goods        |
| 4. Textile Manufacturing Machinery |                                   |

**OCCUPATION:** Calibration and Instrumentation

**REFERENCE ID:** CSC/ Q 0122

**Calibration Technician:** Perform testing and calibration of measuring and control equipment for correct operation in accordance with pre-determined procedures.

**Brief Job Description:** It covers setting, adjustment, validation or verification of precision mechanical, pneumatic, hydraulic, electrical, electronic measuring and control instruments using reference standards in accordance with predetermined standard procedures.

**Personal Attributes:** Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organize own work and identify and solve problems in the course of working. Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness

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Job Details	<b>Qualifications Pack Code</b>	CSC/ Q 0122		
	<b>Job Role</b>	Calibration Technician		
	<b>Credits NSQF [OPTIONAL]</b>		<b>Version number</b>	2.0
	<b>Sector</b>	<b>CAPITAL GOODS</b>	<b>Drafted on</b>	<b>10/04/14</b>
	<b>Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Tools Dies And Press Tools</li> <li>3. Plastic Manufacturing Machinery</li> <li>4. Textile Manufacturing Machinery</li> <li>5. Process Plant Machinery</li> <li>6. Electrical and Power Machinery</li> <li>7. Light Engineering</li> </ol>	<b>Last reviewed on</b>	
<b>Occupation</b>	<b>CALIBRATION AND INSTRUMENTATION</b>	<b>Next review date</b>	<b>15/04/14</b>	

Job Role	Calibration Technician
<b>Role Description</b>	Perform testing and calibration of measuring and control equipment for correct operation in accordance with pre-determined procedures.
<b>NSQF level</b>	L4
<b>Minimum Educational Qualifications*</b>	Diploma
<b>Maximum Educational Qualifications*</b>	
<b>Training</b> (Suggested but not mandatory)	No Previous Training Required
<b>Experience</b>	No Previous Experience Required
<b>Applicable National Occupational Standards (NOS)</b>	<p><b>Compulsory:</b>            CSC/ N 0124 Calibrate measuring and control equipment            CSC/ N 0135 Use basic health and safety practices at the workplace            CSC/ N 0136 Work effectively with others</p> <p><b>Optional:</b>            1. Nil</p>
<b>Performance Criteria</b>	As described in the relevant OS units

Definitions

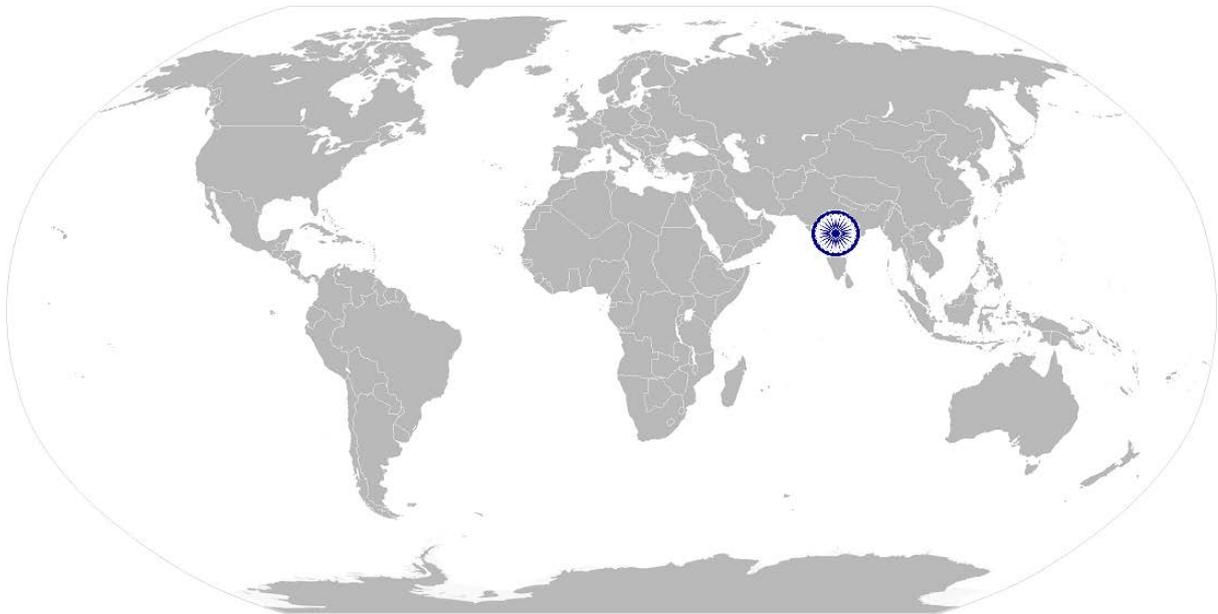
Keywords /Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.
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 NOS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Organisational Context	Organisational 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.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.
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.
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Unit Code	Unit Code is a unique identifier for a NOS unit, which can be denoted with an 'N'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.

Acronyms	Keywords /Terms	Description
	AC / DC	Alternating Current / Direct Current
	RLC	Units of Resistance, Inductance and Capacitance respectively
	CO2	Carbon dioxide
	CPR	Cardiac Pulmonary Resuscitation
	PPE	Personal Protective Equipment

CSC/ N 0124: Calibrate measuring and control equipment

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# National Occupational Standard



## Overview

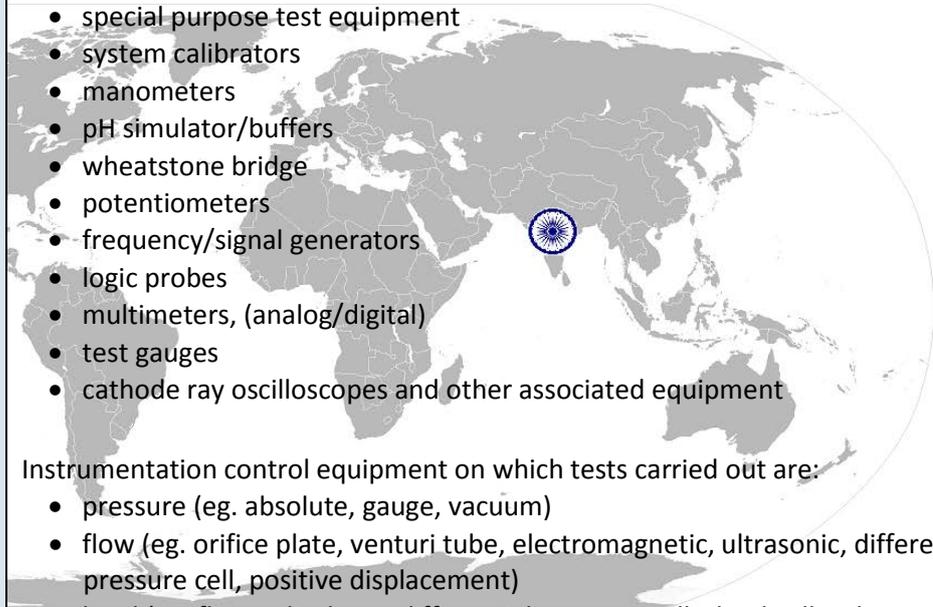
This unit covers testing and calibration of measuring and control equipment for correct operation in accordance with pre-determined procedures.

**CSC/ N 0124: Calibrate measuring and control equipment**

<b>Unit Code</b>	<b>CSC / N 0124</b>
<b>Unit Title (Task)</b>	<b>Calibrate measuring and control equipment</b>
<b>Description</b>	<p>This unit covers setting, adjustment, validation or verification of precision mechanical, pneumatic, hydraulic, electrical, electronic measuring and control instruments using reference standards in accordance with predetermined procedures. This may involve the use of appropriate setting equipment and the selection or determination of an appropriate external standard in accordance with standard operating procedures.</p> <p>The candidate will be able to monitor, repair, and adjust mechanical, pneumatic, hydraulic, electrical or electronic systems within a specified value range. The candidate will be able to maintain, test and repair a variety of instrumentation equipment and make sure that instruments, gauges and testing devices are calibrated correctly using a variety of sophisticated machinery including analytical and electronic measuring devices, recording and indicating instrument and electrical, mechanical and electro-mechanical equipment.</p> <p>The candidate's responsibilities will require complying with organisational policy and procedures for carrying out the testing and calibration activities, and to report any problems with these activities that cannot be resolved, or that are outside permitted authority, to the relevant people. The candidate will be expected to work with minimal supervision, taking personal responsibility for own actions, and for the quality and accuracy of the work carried out.</p> <p>The candidate will have knowledge and in depth understanding of the procedures for carrying out the required tests and calibration, and will provide an informed approach to applying the necessary testing and calibrating procedures. The candidate will understand the equipment being worked on, the test &amp; calibration equipment used, and the various testing/calibrating procedures and their application, in adequate depth to provide a sound basis for carrying out the activities to the required specification and remains compliant with all standards and regulations. In addition, candidate will be expected to review the outcome of the tests/calibration, to compare the results with appropriate specifications, to determine the action required, and to record/report the results in the appropriate format.</p> <p>The candidate will understand the safety precautions required when carrying out the testing and calibrating activities, especially those for isolating the equipment. The candidate's will be required to demonstrate safe working practices throughout, and will understand the responsibility for taking the necessary safeguards to protect oneself and others in the workplace.</p>
<b>Scope</b>	<p>This unit/task covers the following:</p> <p>Testing and calibrating tools used are:</p> <ul style="list-style-type: none"> <li>• oscilloscopes</li> <li>• pressure gauge</li> <li>• standard test gauges</li> <li>• temperature controllers</li> <li>• temperature baths</li> </ul>

**CSC/ N 0124: Calibrate measuring and control equipment**

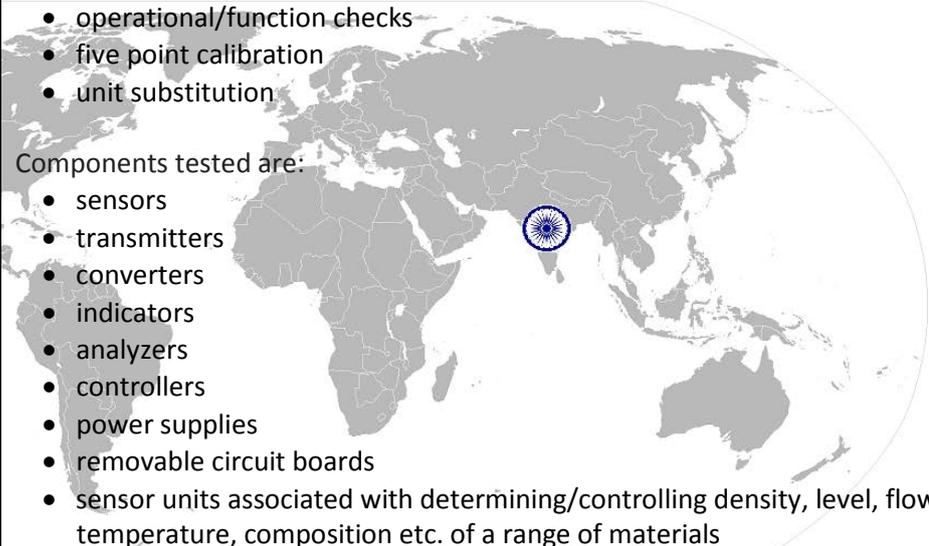
- micrometer
- current injection devices
- voltmeter
- all types of comparators
- jigs and fixtures
- templates and patterns
- insulation testers
- calibrated weights
- pressure sources
- vernier caliper
- analogue and digital meters
- digital pressure indicators
- dead weight tester
- logic probes
- calibrated flow meters
- special purpose test equipment
- system calibrators
- manometers
- pH simulator/buffers
- wheatstone bridge
- potentiometers
- frequency/signal generators
- logic probes
- multimeters, (analog/digital)
- test gauges
- cathode ray oscilloscopes and other associated equipment



Instrumentation control equipment on which tests carried out are:

- pressure (eg. absolute, gauge, vacuum)
- flow (eg. orifice plate, venturi tube, electromagnetic, ultrasonic, differential pressure cell, positive displacement)
- level (eg. floats, displacer, differential pressure cells, load cells, ultrasonic, conductivity)
- temperature (eg. bi-metallic, thermocouples, resistance, infra-red, thermal imaging)
- weight (eg. mechanical systems, load cells/strain gauges, transducers)
- fiscal metering (eg. gas, electricity, water, fuel)
- detection and alarm (eg. smoke, heat, gas, chemical, water, metal)
- speed measurement (eg. mechanical, electrical, stroboscopic)
- emergency shutdown
- speed control (eg. mechanical governors, electrical governors, DC speed controller, AC motor control systems, stepper motors, invertors)
- vibration monitoring (eg. vibration switches, proximity probes, seismic velocity transducer, linear variable differential transformers, portable data collectors)
- analyzers (eg. gas detection, spectroscopy, oxygen analyzer, water analysis, moisture measurement, density)

**CSC/ N 0124: Calibrate measuring and control equipment**

	<ul style="list-style-type: none"> <li>• recorders and indicators</li> <li>• telemetry systems (eg. master station, outstation, standalone systems)</li> <li>• valves and valve mechanisms (eg. control valves, valve actuators and positioners)</li> <li>• other specific instrumentation</li> </ul> <p>Various tests and calibrations carried out are:</p> <ul style="list-style-type: none"> <li>• visual inspection of the instrument for completeness and freedom from damage or foreign objects</li> <li>• standard serviceability test/calibration</li> <li>• equipment self-diagnostics</li> <li>• leak/pressure test</li> <li>• signal injection tests</li> <li>• soak test</li> <li>• special-to-type tests</li> <li>• signal measurement and transmission</li> <li>• operational/function checks</li> <li>• five point calibration</li> <li>• unit substitution</li> </ul> <p>Components tested are:</p> <ul style="list-style-type: none"> <li>• sensors</li> <li>• transmitters</li> <li>• converters</li> <li>• indicators</li> <li>• analyzers</li> <li>• controllers</li> <li>• power supplies</li> <li>• removable circuit boards</li> <li>• sensor units associated with determining/controlling density, level, flow, temperature, composition etc. of a range of materials</li> </ul> 
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Checking equipment for correct operation</b>	The user/individual on the job should be able to: PC1. checks components, leads, fasteners, etc. for wear, loose connections or other faults
<b>Testing measure and control equipment</b>	The user/individual on the job should be able to: PC2. produce and update relevant testing/calibration schedules and plans PC3. carry out the testing/calibration activities in the specified sequence and in an agreed timescale PC4. work/test requirements are identified and defined to standard operating procedures PC5. inspect and test the operation of instruments and systems to diagnose faults using testing devices PC6. correct test application principles are selected after inspection of

**CSC/ N 0124: Calibrate measuring and control equipment**

	<p>instrumentation systems, equipment/components</p> <p>PC7. appropriate test equipment is selected in accordance with defined requirements</p> <p>PC8. device isolation methods/requirements are observed and localized</p> <p>PC9. appropriate test procedures and application principles are applied in assessing operation of instrumentation systems, equipment/components</p> <p>PC10. report any instances where the testing/calibration activities cannot be fully met or where there are identified defects outside the planned schedule</p> <p>PC11. complete relevant testing/calibration documentation accurately</p>
<p><b>Analyzing and reporting test results</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC12. test results are analyzed/verified against operational specifications and localized faults are confirmed</p> <p>PC13. report potential and real faults using standard operating procedures</p> <p>PC14. evaluate faulty conditions and plan corrective action</p> <p>PC15. Record action plan and document according to standard operating procedures</p>
<p><b>Calibrating measuring and control equipment</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC16. assess calibration of measuring and control equipment to manufacturers' specifications and/or standard operating procedures</p> <p>PC17. calibrate equipment against appropriate physical standards using correct calibration devices, equipment, techniques using predetermined procedures</p> <p>PC18. undertake zero, span and range checks on indicators/controllers using correct and appropriate configuration</p> <p>PC19. perform methods of adjustment using calibration devices and document prescribed procedures and operational specifications</p> <p>PC20. re-commission equipment in accordance with standard operating procedures</p> <p>PC21. refer the problem to a competent internal/external specialist if it cannot be resolved</p> <p>PC22. obtain help or advice from specialist if the problem is outside his/her area of competence or experience</p> <p>PC23. monitor the problem and keep the supervisor informed about progress or any delays in resolving the problem</p> <p>PC24. comply with relevant legislation, standards, policies and procedures</p>
<p><b>Knowledge and Understanding (K)</b></p>	
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. relevant health and safety requirements applicable in the work place</p> <p>KA3. importance of working in clean and safe environment</p> <p>KA4. own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities</p> <p>KA5. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA6. relevant people and their responsibilities within the work area</p>

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	<p>KA7. escalation matrix and procedures for reporting work and employment related issues</p> <p>KA8. documentation and related procedures applicable in the context of employment and work</p> <p>KA9. importance and purpose of documentation in context of employment and work</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. knowledge of standards, legislative or regulatory requirements applicable to the measuring equipment and/or its calibration</p> <p>KB2. standard operating procedures for calibrating the measuring equipment and the tools and equipment required to do so</p> <p>KB3. standard operating procedures for commissioning the measuring equipment</p> <p>KB4. calibration records to be kept/maintained in accordance with standard operating procedures measuring equipment specifications, operation, wearing parts, connections and components</p> <p>KB5. national quality standards, along with a good understanding of electricity and electrical circuitry</p> <p>KB6. using appropriate tools and equipment to check measuring equipment for faults</p> <p>KB7. using appropriate techniques to check the calibration of the measuring equipment for conformance to specifications</p> <p>KB8. calibrating the measuring equipment against the appropriate physical standard</p> <p>KB9. re-commissioning the measuring equipment</p> <p>KB10. checks that are to be made of the measuring equipment and the tools and equipment to be used when checking the measuring equipment</p> <p>KB11. common fault(s) that may be found in the measuring equipment</p> <p>KB12. effects of faults on the performance/accuracy of the measuring equipment</p> <p>KB13. hazards and controls associated with calibrating measuring equipment</p> <p>KB14. functionality of the equipment and tolerance levels for calibration</p> <p>KB15. instrumentation principles (eg. controlling density, level, flow, temperature, composition of a range of materials)</p> <p>KB16. effects of resistance, capacitance, inductance and impedance upon electrical circuit including RLC series circuit</p> <p>KB17. interpretation requirements of schematic, wiring and block diagrams and circuits</p> <p>KB18. principles of hydraulic, pneumatic and electrical flow</p> <p>KB19. calibration procedures of instrumentation systems and equipment/ components</p> <p>KB20. purpose/operational function of instrumentation system</p> <p>KB21. procedures and equipment for inspecting and testing instrumentation system</p> <p>KB22. specifications of each instrumentation system and acceptable deviations from specifications</p> <p>KB23. procedures for repairing faulty instrumentation system</p> <p>KB24. dismantling, reassembly and testing techniques</p> <p>KB25. correct operation of the instrumentation system including the procedures for isolating instrumentation systems</p> <p>KB26. range of faults in instrumentation system/equipment components</p>

**CSC/ N 0124: Calibrate measuring and control equipment**

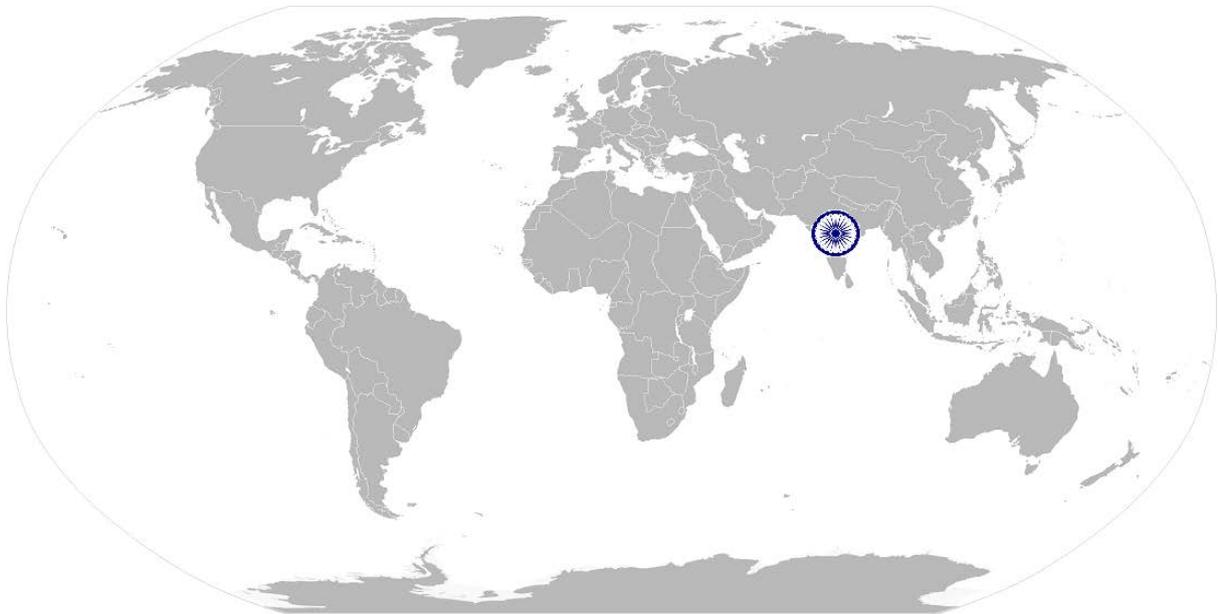
	<p>KB27. procedures for checking and verifying the operational function of the instrumentation system/equipment</p> <p>KB28. procedures for recording and completing service reports</p> <p>KB29. operational specifications of the instrumentation system/equipment</p> <p>KB30. variations between test results and operational specifications</p> <p>KB31. probable causes of faults in instrumentation system/equipment components</p> <p>KB32. action to be taken to rectify the causes of faults in instrumentation systems/equipment</p> <p>KB33. sequence of events to be undertaken to correct faults in the instrumentation system/equipment components</p> <p>KB34. errors indicated by built-in devices</p> <p>KB35. methods of determining procedures</p> <p>KB36. procedures for reporting faults</p> <p>KB37. difference between real and potential faults</p> <p>KB38. procedures for recording/documenting test and calibration results</p> <p>KB39. function and procedures for zero, span and range checks on instrumentation systems/equipment</p> <p>KB40. equipment required to carry out the calibration of instrumentation systems/equipment</p>
<b>Skills (S) [Optional]</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Communication</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. read and interpret information correctly from various job specification documents, manuals, health and safety instructions, memos, etc. applicable to the job in English and/or local language</p> <p>SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language</p> <p>SA3. convey and share technical information clearly using appropriate language</p> <p>SA4. check and clarify task-related information</p> <p>SA5. liaise with appropriate authorities using correct protocol</p> <p>SA6. communicate with people in respectful form and manner in line with organizational protocol</p>
	<b>Numerical and computational skills</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA7. undertake numerical operations, and calculations/ formulae</p> <p>SA8. identify and draw various basic, compound and solid shapes as per dimensions given</p> <p>SA9. use appropriate measuring techniques and units of measurement</p> <p>SA10. use appropriate units and number systems to express degree of accuracy</p> <p>SA11. interpret and express tolerance in terms of limits on dimensions</p> <p>SA12. calculation of the value of angles in a triangle</p>
	<b>Learning</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA13. maintain current knowledge of applicable standards, legislation, codes of practice and product/process developments</p>

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	<p>SA14. participate in on-the-job and other learning, training and development interventions and assessment</p> <p>SA15. clarify task related information with appropriate personnel or technical adviser</p> <p>SA16. seek to improve and modify own work practices</p>
<b>B. Professional Skills</b>	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to:
	SB1. identify problems with work planning, procedures, output and behavior and their implications
	SB2. prioritize and plan for problem solving
	SB3. communicate problems appropriately to others
	SB4. identify sources of information and support for problem solving
	SB5. seek assistance and support from other sources to solve problems
	SB6. identify effective resolution techniques
	SB7. select and apply resolution techniques
	SB8. seek evidence for problem resolution
<b>Plan and Organize</b>	
The user/individual on the job needs to know and understand:	
SB9. plan, prioritize and sequence work operations as per job requirements	
SB10. organize and analyze information relevant to work	
SB11. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time	
<b>Initiative</b>	
The user/individual on the job needs to know and understand how to:	
SB12. importance and impact of initiative and enterprise for achieving better results for self, others and organization	
SB13. how to undertake and express new ideas and initiatives to others	
SB14. modify work plan to overcome unforeseen difficulties or developments that occur as work progresses	
SB15. participate in improvement procedures including process, quality and internal/external customer/supplier relationships	
SB16. one's competencies can and should be applied in new and different situations and contexts to achieve more	
<b>Self-Management</b>	
The user/individual on the job needs to know and understand how to:	
SB17. importance of taking responsibility for own work outcomes	
SB18. importance of adherence to work timings, dress code and other organizational policies	
SB19. importance of following laid down rules, procedures, instructions and policies	
SB20. importance of exercising restraint while expressing dissent and during conflict situations	
SB21. how to avoid and manage distractions to be disciplined at work	
SB22. importance of time management for achieving better results	
<b>Teamwork</b>	
The user/individual on the job needs to know and understand how to:	

**CSC/ N 0124: Calibrate measuring and control equipment**

	SB23. work in a team in order to achieve better results SB24. identify and clarify work roles within a team SB25. communicate and cooperate with others in the team SB26. seek assistance from fellow team members
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB27. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action



**CSC/ N 0124: Calibrate measuring and control equipment**

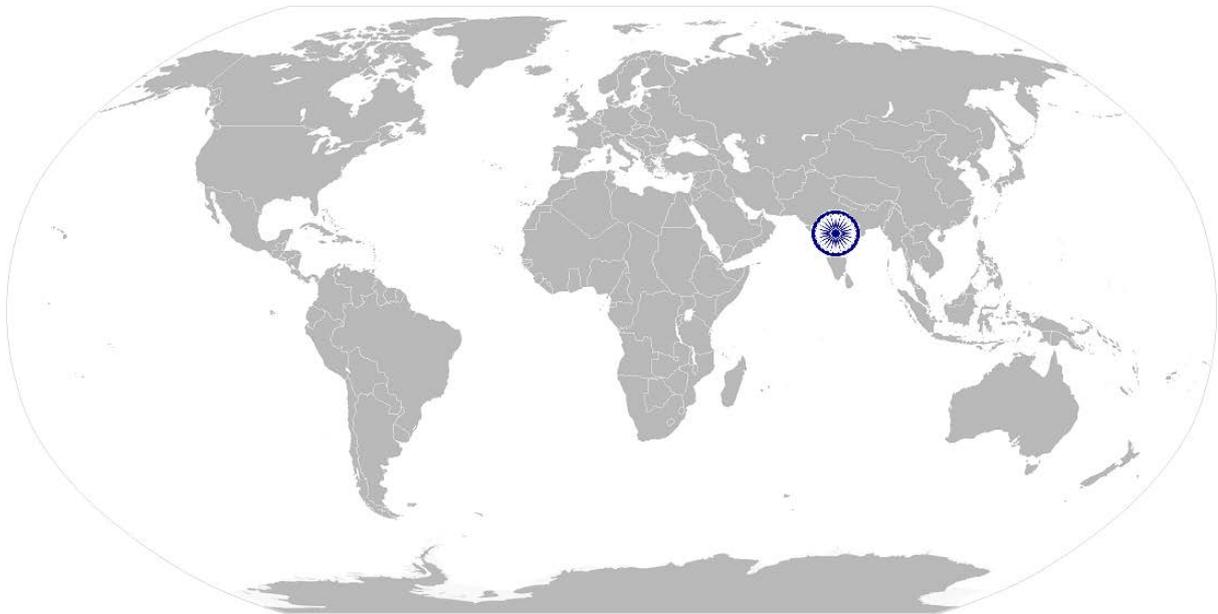
**NOS Version Control**

<b>NOS Code</b>	<b>CSC/ N 0124</b>		
<b>Credits NSQF [OPTIONAL]</b>		<b>Version number</b>	<b>2.0</b>
<b>Industry</b>	<b>Capital Goods</b>	<b>Drafted on</b>	<b>10/04/14</b>
<b>Industry Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Tools Dies And Press Tools</li> <li>3. Plastic Manufacturing Machinery</li> <li>4. Textile Manufacturing Machinery</li> <li>5. Process Plant Machinery</li> <li>6. Electrical and Power Machinery</li> <li>7. Light Engineering</li> </ol>	<b>Last reviewed on</b>	
		<b>Next review date</b>	<b>15/04/14</b>

CSC/ N 0135: Use basic health and safety practices at the workplace

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# National Occupational Standard



## Overview

This unit covers health, safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.

**CSC/ N 0135: Use basic health and safety practices at the workplace**

<b>Unit Code</b>	<b>CSC / N 0135</b>
<b>Unit Title (Task)</b>	<b>Use basic health and safety practices at the workplace</b>
<b>Description</b>	<p>This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment.</p> <p>It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.</p> <p>It covers knowledge of fire safety, common first aid applications, safe practices and emergency procedures.</p>
<b>Scope</b>	<p>This unit/task covers the following:</p> <p>Protective clothing includes:</p> <ul style="list-style-type: none"> <li>• leather or asbestos gloves</li> <li>• flame proof aprons</li> <li>• flame proof overalls buttoned to neck</li> <li>• cuffless (without folds) trousers</li> <li>• reinforced footwear</li> <li>• helmets/hard hats</li> <li>• cap and shoulder covers</li> <li>• ear defenders/plugs</li> <li>• safety boots</li> <li>• knee pads</li> <li>• particle masks</li> <li>• glasses/goggles/visors</li> </ul>  <p>Equipment includes:</p> <ul style="list-style-type: none"> <li>• hand shields</li> <li>• machine guards</li> <li>• residual current devices</li> <li>• shields</li> <li>• dust sheets</li> <li>• respirator</li> </ul> <p>Hazards include:</p> <ul style="list-style-type: none"> <li>• working with electrical and thermal tools and equipment</li> <li>• sharp edged and heavy tools</li> <li>• heated metals</li> <li>• oxyfuel and gas cylinders</li> <li>• welding radiation</li> <li>• Surfaces: sharp, slippery, uneven, chipped, broken, etc.</li> <li>• Substances: chemicals, gas, oxy-fuel, fumes, dust, etc.</li> <li>• Physical: working at heights, large and heavy objects and machines, sharp and piercing objects, tolls and machines, intense light, load noise,</li> </ul>

**CSC/ N 0135: Use basic health and safety practices at the workplace**

	<p>obstructions in corridors, by doors, blind turns, noise, over stacked shelves and packages, etc.</p> <ul style="list-style-type: none"> <li>• Electrical: power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.</li> </ul> <p>Safe working practices include:</p> <ul style="list-style-type: none"> <li>• using protective clothing and equipment</li> <li>• putting up and reading safety signs</li> <li>• handle tools in the correct manner and store and maintain them properly</li> <li>• keep work area clear of clutter, spillage and unsafe object lying casually</li> <li>• while working with electricity take all electrical precautions like insulated clothing, adequate equipment insulation, use of control equipment, dry work area, switch off the power supply when not required, etc.</li> <li>• safe lifting and carrying practices</li> <li>• use equipment that is working properly and is well maintained</li> <li>• take due measures for safety while working in confined places, trenches or at heights, etc. including safety harness, fall arrestors, etc.</li> </ul> <p>Methods are:</p> <ul style="list-style-type: none"> <li>• training in health and safety procedures</li> <li>• using health and safety procedures</li> <li>• use of equipment and working practices (such as safe carrying procedures)</li> <li>• safety notices, advice</li> <li>• instruction from colleagues and supervisors</li> </ul> <p>Faults include:</p> <ul style="list-style-type: none"> <li>• corrosion of metal components</li> <li>• deterioration</li> <li>• splits and cracks timber components</li> <li>• imbalance</li> <li>• loose rungs</li> <li>• nuts or bolts, etc.</li> </ul> <p>Ladders set up includes:</p> <ul style="list-style-type: none"> <li>• firm/level base</li> <li>• clip/lash down</li> <li>• leaning at the correct angle, etc.</li> </ul> <p>Good housekeeping practices include:</p> <ul style="list-style-type: none"> <li>• clean/tidy work areas</li> <li>• removal/disposal of waste products</li> <li>• protect surfaces</li> </ul> <p>Emergency procedures include:</p> <ul style="list-style-type: none"> <li>• raising alarm</li> </ul>
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- safe/efficient evacuation
- correct means of escape
- correct assembly point
- roll call
- correct return to work

Various areas are:

- on chemical containers
- equipment
- packages
- inside buildings
- in open areas and public spaces, etc.

General health and safety equipment includes:

- fire extinguishers
- first aid equipment
- safety instruments and clothing
- safety installations, eg fire exits, exhaust fans

Incident Report includes details of:

- name
- date/time of incident
- date/time of report,
- location
- environment conditions
- persons involved
- sequence of events
- injuries sustained
- damage sustained
- actions taken
- witnesses
- supervisor/manager notified

Job titles include:

- health and safety officer
- first aid officer
- fire officer

Documents include:

- fire notices
- accident reports
- safety instructions for equipment and procedures
- company notices and documents
- legal documents (eg government notices)

Activities and causes include:

- physical actions



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	<ul style="list-style-type: none"> <li>• reading</li> <li>• listening to and giving instructions</li> <li>• inattention</li> <li>• sickness and incapacity (such as drunkenness)</li> <li>• health hazards (such as untreated injuries and contagious illness)</li> </ul> <p>Exposure to toxic materials could be by:</p> <ul style="list-style-type: none"> <li>• exposure: ingested, contact with skin, inhaled</li> <li>• preventative action: ventilation, masks, protective clothing/equipment</li> <li>• remedial action: immediate first aid, report to supervisor</li> <li>• materials: solvents, flux, lead</li> </ul> <p>Types of fires are:</p> <ul style="list-style-type: none"> <li>• Class A: eg. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.</li> <li>• Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances</li> <li>• Class C: eg. electrical equipment such as appliances, wiring, breaker panels, etc. (These categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no longer receiving electricity)</li> <li>• Class D: combustible metals such as magnesium, titanium, and sodium (These fires burn at extremely high temperatures and require special suppression agents)</li> </ul> <p>Causes of fires are:</p> <ul style="list-style-type: none"> <li>• heating of metal</li> <li>• spontaneous ignition</li> <li>• sparking</li> <li>• electrical heating</li> <li>• loose fires (smoking, welding, etc.)</li> <li>• chemical fires, etc.</li> </ul> <p>Fire extinguishers use:</p> <ul style="list-style-type: none"> <li>• sand</li> <li>• water</li> <li>• foam</li> <li>• CO2</li> <li>• dry powder</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Health and safety</b>	<p>The user/individual on the job should be able to:</p> <p>PC1. use protective clothing/equipment for specific tasks and work conditions</p> <p>PC2. state the name and location of people responsible for health and safety in the workplace.</p>

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	<p>PC3. state the names and location of documents that refer to health and safety in the workplace</p> <p>PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace</p> <p>PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role</p> <p>PC6. state location of general health and safety equipment in the workplace</p> <p>PC7. inspect for faults, set up and safely use steps and ladders in general use</p> <p>PC8. work safely in and around trenches, elevated places and confined areas</p> <p>PC9. lift heavy objects safely using correct procedures</p> <p>PC10. apply good housekeeping practices at all times</p> <p>PC11. identify common hazard signs displayed in various areas</p> <p>PC12. retrieve and/or point out documents that refer to health and safety in the workplace</p>
<b>Fire safety</b>	<p>The user/individual on the job should be able to:</p> <p>PC13. use the various appropriate fire extinguishers on different types of fires correctly</p> <p>PC14. demonstrate rescue techniques applied during fire hazard</p> <p>PC15. demonstrate good housekeeping in order to prevent fire hazards</p> <p>PC16. demonstrate the correct use of a fire extinguisher.</p>
<b>Emergencies, rescue and first-aid procedures</b>	<p>The user/individual on the job should be able to:</p> <p>PC17. demonstrate how to free a person from electrocution</p> <p>PC18. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.</p> <p>PC19. demonstrate basic techniques of bandaging</p> <p>PC20. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments</p> <p>PC21. perform and organize loss minimization or rescue activity during an accident in real or simulated environments</p> <p>PC22. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases</p> <p>PC23. demonstrate the artificial respiration and the CPR Process</p> <p>PC24. participate in emergency procedures</p> <p>PC25. complete a written accident/incident report or dictate a report to another person, and send report to person responsible</p> <p>PC26. demonstrate correct method to move injured people and others during an emergency</p>
<b>Knowledge and Understanding (K)</b>	

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<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace.</p> <p>KA2. names and location of documents that refer to health and safety in the workplace.</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA3. meaning of “hazards” and “risks”</p> <p>KA4. health and safety hazards commonly present in the work environment and related precautions</p> <p>KA5. possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KA6. activities and causes of risk and accident</p> <p>KA7. methods of accident prevention</p> <p>KA8. safe working practices when working with tools and machines</p> <p>KA9. safe working practices while working at various hazardous sites</p> <p>KA10. where to find all the general health and safety equipment in the workplace</p> <p>KA11. various dangers associated with the use of electrical equipment</p> <p>KA12. preventative and remedial actions to be taken in the case of exposure to toxic materials</p> <p>KA13. importance of using protective clothing/equipment while working</p> <p>KA14. precautionary activities to prevent the fire accident</p> <p>KA15. various causes of fire</p> <p>KA16. techniques of using the different fire extinguishers</p> <p>KA17. different methods of extinguishing fire</p> <p>KA18. rescue techniques applied during a fire hazard</p> <p>KA19. various types of safety signs and what they mean</p> <p>KA20. appropriate basic first aid treatment relevant to the condition eg. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries</p> <p>KA21. content of written accident report</p> <p>KA22. potential injuries and ill health associated with incorrect manual handling</p> <p>KA23. safe lifting and carrying practices</p> <p>KA24. personal safety, health and dignity issues relating to the movement of a person by others.</p> <p>KA25. potential impact to a person who is moved incorrectly</p>
<p><b>Skills (S) [Optional]</b></p>	
<p><b>A. Core Skills/ Generic Skills</b></p>	<p><b>Reading and Writing Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. read and comprehend basic content to read labels, charts, signages</p> <p>SA2. read and comprehend basic English to read manuals of operations</p> <p>SA3. read and write an accident/incident report in local language or English</p>

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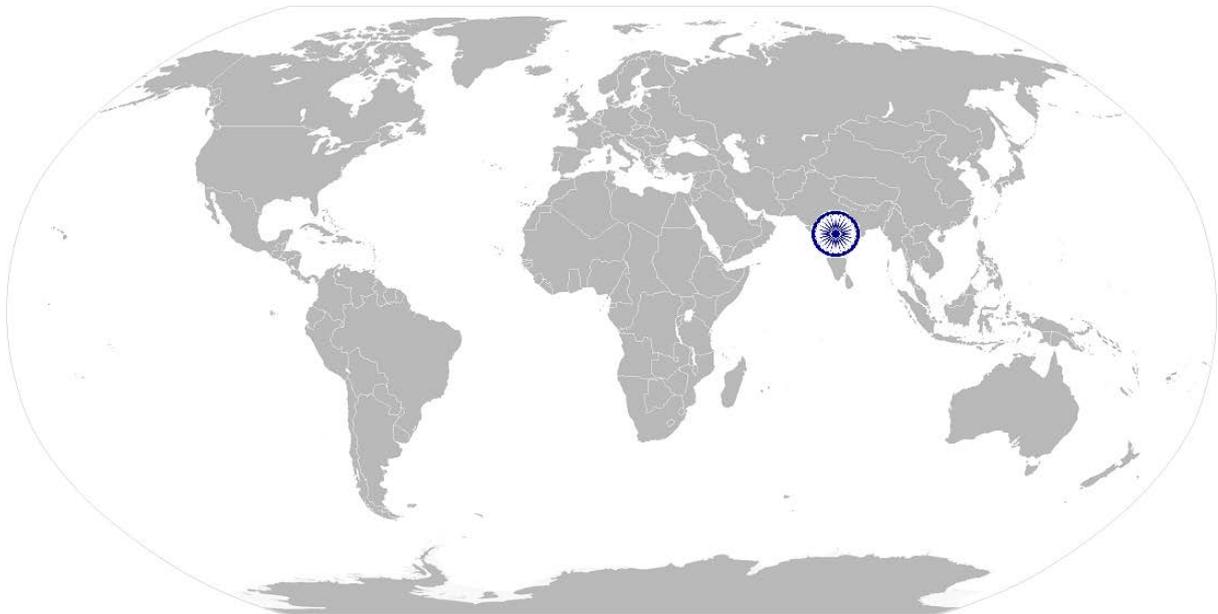
	<p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA4. question coworkers appropriately in order to clarify instructions and other issues</p> <p>SA5. give clear instructions to coworkers, subordinates others</p>
	<p><b>Decision Making</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines</p>
<p><b>B. Professional Skills</b></p>	<p><b>Plan and Organize</b></p>
	<p>The user/individual on the job needs to know and understand:</p> <p>SB1. plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity</p>
	<p><b>Working with others</b></p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. remain congenial while discussing and debating issues with co-workers</p> <p>SB3. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice</p> <p>SB4. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives</p> <p>SB5. thank coworkers for any assistance received</p> <p>SB6. offer appropriate respect based on mutuality and respect for fellow workmanship and authority</p>
	<p><b>Problem Solving</b></p>
<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)</p> <p>SB8. identify immediate or temporary solutions to resolve delays</p> <p>SB9. identify sources of support that can be availed of for problem solving for various kind of problems</p> <p>SB10. seek appropriate assistance from other sources to resolve problems</p> <p>SB11. report problems that you cannot resolve to appropriate authority</p>	
<p><b>Analytical Thinking</b></p>	
<p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. identify cause and effect relations in their area of work</p> <p>SB13. use cause and effect relations to anticipate potential problems and their solution</p>	

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## NOS Version Control

<b>NOS Code</b>	<b>CSC / N 0135</b>		
<b>Credits(NSQF) [OPTIONAL]</b>		<b>Version number</b>	<b>2.0</b>
<b>Industry</b>	<b>Capital Goods</b>	<b>Drafted on</b>	<b>10/04/14</b>
<b>Industry Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Tools Dies And Press Tools</li> <li>3. Plastic Manufacturing Machinery</li> <li>4. Textile Manufacturing Machinery</li> <li>5. Process Plant Machinery</li> <li>6. Electrical and Power Generation Machinery</li> <li>7. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	
		<b>Next review date</b>	<b>15/04/14</b>

# National Occupational Standard



## Overview

This unit covers basic practices that improve effectiveness of working with others in an organizational set-up.

**CSC/ N 0136: Work effectively with others**

<b>Unit Code</b>	<b>CSC / N 0136</b>
<b>Unit Title (Task)</b>	<b>Work effectively with others</b>
<b>Description</b>	<p>This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the workplace.</p> <p>These cover areas such as communication etiquette, discipline, listening, handling conflict and grievances.</p>
<b>Scope</b>	<p>This unit/task covers the following:</p> <p>Etiquette includes:</p> <ul style="list-style-type: none"> <li>do not use abusive language</li> <li>use appropriate titles and terms of respect</li> <li>do not eat or chew while talking (vice versa)etc.</li> </ul> <p>Behaviors include:</p> <ul style="list-style-type: none"> <li>punctuality</li> <li>completing tasks as per given time and standards</li> <li>not gossiping and idling time</li> <li>eliminating waste</li> <li>honesty, etc.</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
	<p>The user/individual on the job should be able to:</p> <p>PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required</p> <p>PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt</p> <p>PC3. give information to others clearly, at a pace and in a manner that helps them to understand</p> <p>PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible</p> <p>PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks</p> <p>PC6. display appropriate communication etiquette while working</p> <p>PC7. display active listening skills while interacting with others at work</p> <p>PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism</p> <p>PC9. demonstrate responsible and disciplined behaviors at the workplace</p> <p>PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b>	The user/individual on the job needs to know and understand:

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<p>(Knowledge of the company / organization and its processes)</p>	<p>KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA3. relevant people and their responsibilities within the work area</p> <p>KA4. escalation matrix and procedures for reporting work and employment related issues</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. various categories of people that one is required to communicate and co-ordinate with in the organization</p> <p>KB2. importance of effective communication in the workplace</p> <p>KB3. importance of teamwork in organizational and individual success</p> <p>KB4. various components of effective communication</p> <p>KB5. key elements of active listening</p> <p>KB6. value and importance of active listening and assertive communication</p> <p>KB7. barriers to effective communication</p> <p>KB8. importance of tone and pitch in effective communication</p> <p>KB9. importance of avoiding casual expletives and unpleasant terms while communicating professional circles</p> <p>KB10. how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer</p> <p>KB11. importance of ethics for professional success</p> <p>KB12. importance of discipline for professional success</p> <p>KB13. what constitutes disciplined behavior for a working professional</p> <p>KB14. common reasons for interpersonal conflict</p> <p>KB15. importance of developing effective working relationships for professional success</p> <p>KB16. expressing and addressing grievances appropriately and effectively</p> <p>KB17. importance and ways of managing interpersonal conflict effectively</p>
<p><b>Skills (S) [Optional]</b></p>	

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## NOS Version Control

NOS Code	CSC / N 0136		
Credits(NSQF) [OPTIONAL]		Version number	2.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	1. Machine Tools 2. Tools Dies And Press Tools 3. Plastic Manufacturing Machinery 4. Textile Manufacturing Machinery 5. Process Plant Machinery 6. Electrical and Power Machinery 7. Light Engineering Goods	Last reviewed on	
		Next review date	15/04/14