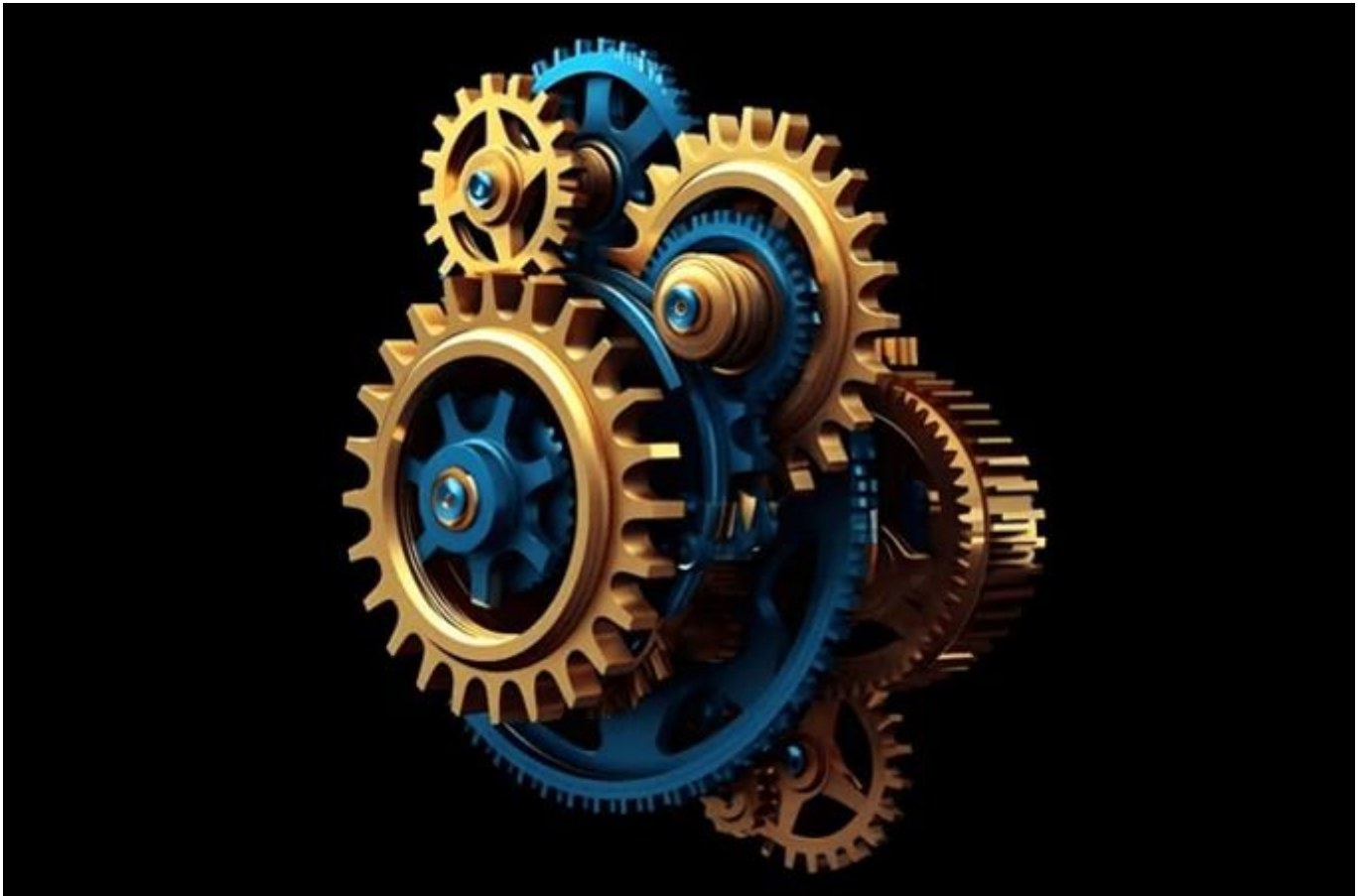


## Qualification Pack



# Fitter - Mechanical Assembly

QP Code: CSC/Q0304

Version: 4.0

NSQF Level: 3

Capital Goods & Strategic Skill Council || 1st Floor, L-29, Outer Circle, Connaught Place  
New Delhi - 110001 || email:technicaladvisors@cgsc.in

## Qualification Pack

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## Qualification Pack

### CSC/Q0304: Fitter - Mechanical Assembly

#### Brief Job Description

The incumbent in the job is responsible for performing machining, fitting and assembly activities to produce machinery or machine components of required features and specifications.

#### Personal Attributes

The job holder must have an eye for detail as well as the patience and discipline required to carry out detailed and repetitive tasks. The candidate should be able to read and understand technical manuals, instructions and warnings.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [CSC/N1335: Follow the health and safety practices at the work](#)
2. [CSC/N1336: Coordinate with co-workers to achieve work efficiency](#)
3. [CSC/N0304: Perform Precision fitting and Mechanical assembly operations using Digital Technologies \(using Digital tools/Digital read outs\).](#)
4. [DGT/VSQ/N0101: Employability Skills \(30 Hours\)](#)

#### Qualification Pack (QP) Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools
Occupation	Fabrication, Fitting and Assembly
Country	India
NSQF Level	3
Credits	13
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8211.1202

### Qualification Pack

<b>Minimum Educational Qualification &amp; Experience</b>	Grade 8 pass with 2 years of (NTC/ NAC) after 8th (or equivalent) OR 9th Class with 1.5 years of experience relevant OR 8th Class pass with 3 Years of experience relevant OR Previous relevant Qualification of NSQF Level 2.5 with 1.5 years of experience relevant OR Previous relevant Qualification of NSQF Level 2 with 3 Years of experience relevant OR 10th Class (or equivalent)
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	30/04/2028
<b>NSQC Approval Date</b>	08/05/2025
<b>Version</b>	4.0
<b>Reference code on NQR</b>	QG-03-CG-03933-2025-V2-CGSSC
<b>NQR Version</b>	4.0

## Qualification Pack

### CSC/N1335: Follow the health and safety practices at the work

#### Description

This OS unit is about following the appropriate health and safety practices at work. It covers responsibilities towards self and others to ensure a safe work environment.

#### Scope

The scope covers the following :

- Maintain personal health and safety
- Assist in hazard management
- Check the first aid box, firefighting and safety equipment
- Assist in waste management
- Follow the fire safety guidelines
- Follow the emergency and first-aid procedures
- Carry out relevant documentation and review

#### Elements and Performance Criteria

##### *Maintain personal health and safety*

To be competent, the user/individual on the job must be able to:

- PC1. follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask
- PC2. check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them
- PC3. select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions
- PC4. follow the recommended techniques while lifting and moving heavy objects to avoid injury
- PC5. follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment

##### *Assist in hazard management*

To be competent, the user/individual on the job must be able to:

- PC6. identify existing and potential hazards at work
- PC7. assess the potential risks and injuries associated with the identified hazards
- PC8. coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards
- PC9. handle hazardous materials safely and store them in the designated storage

##### *Check the first aid box, firefighting and safety equipment*

To be competent, the user/individual on the job must be able to:

- PC10. check the first aid box to ensure it is updated with the relevant first aid supplies
- PC11. check and test the firefighting and various safety equipment to ensure they are in usable condition

## Qualification Pack

PC12. coordinate with the supervisor for the repair and replacement of firefighting and safety equipment

### *Assist in waste management*

To be competent, the user/individual on the job must be able to:

PC13. segregate waste into appropriate categories

PC14. recycle the recyclable waste appropriately

PC15. dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations

### *Follow the fire safety guidelines*

To be competent, the user/individual on the job must be able to:

PC16. use the appropriate type of fire extinguisher to extinguish different types of fires safely

PC17. follow the recommended practices for a safe rescue during a fire emergency

PC18. coordinate with the fire department to request assistance to extinguish a serious fire

### *Follow the emergency and first-aid procedures*

To be competent, the user/individual on the job must be able to:

PC19. follow the organisational health and safety guidelines during workplace emergencies to ensure own and co-workers' safety

PC20. follow the recommended practices to minimise loss to organisational property during an emergency

PC21. follow the recommended procedure to free a person from electrocution

PC22. administer appropriate first aid to the injured personnel

PC23. perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest

PC24. coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation

### *Carry out relevant documentation and review*

To be competent, the user/individual on the job must be able to:

PC25. carry out appropriate documentation following a health and safety incident at work, including all the required information

PC26. coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident

PC27. assist in implementing appropriate changes to improve the health and safety conditions at work

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the recommended practices to be followed to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask

KU2. the importance and process of checking the work conditions, assessing the potential health and safety risks, and take appropriate measures to mitigate them

KU3. the importance and process of selecting and using the appropriate PPE relevant to the task and work conditions

## Qualification Pack

- KU4. the recommended techniques to be followed while lifting and moving heavy objects to avoid injury
- KU5. the importance of following the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment
- KU6. the importance and process of identifying existing and potential hazards at work
- KU7. the process of assessing the potential risks and injuries associated with the various hazards
- KU8. how to prevent or minimise different types of hazards
- KU9. how to handle and store hazardous materials safely
- KU10. the importance of ensuring the first aid box is updated with the relevant first aid supplies
- KU11. the process of checking and testing the firefighting and various safety equipment to ensure they are in a usable condition
- KU12. the criteria for segregating waste into appropriate categories
- KU13. the appropriate methods for recycling the recyclable waste
- KU14. the process of disposing of the non-recyclable waste safely and the applicable regulations
- KU15. Use of different types of fire extinguishers to extinguish different types of fires
- KU16. the recommended practices to be followed for a safe rescue during a fire emergency
- KU17. how to request assistance from the fire department to extinguish a serious fire
- KU18. the appropriate practices to be followed during workplace emergencies to ensure safety and minimise loss to organisational property
- KU19. common health and safety hazards present in a work environment, associated risks, and how to mitigate them
- KU20. safe working practices to be followed while working at various hazardous sites and using electrical equipment
- KU21. the importance of ensuring easy access to firefighting and safety equipment
- KU22. the appropriate preventative and remedial actions to be taken in the case of exposure to toxic materials, such as poisonous chemicals and gases
- KU23. various causes of fire in different work environments and the recommended precautions to be taken to prevent fire accidents
- KU24. different methods of extinguishing fire
- KU25. different materials used for extinguishing fire, such as sand, water, foam, CO<sub>2</sub>, dry powder, etc.
- KU26. the applicable rescue techniques to be followed during a fire emergency
- KU27. the importance of placing safety signs and instructions at strategic locations in a workplace and following them
- KU28. different types of first aid treatment to be provided for different types of injuries
- KU29. potential injuries associated with incorrect manual handling
- KU30. how to move an injured person safely
- KU31. various hazards associated with the use of various machinery, tools, implements, equipment and materials
- KU32. the importance of ensuring no obstruction and free access to fire exits
- KU33. how to free a person from electrocution safely
- KU34. how to administer appropriate first aid to an injured person

## Qualification Pack

- KU35. how to perform Cardiopulmonary Resuscitation (CPR)
- KU36. the importance of coordinating with the emergency services to request urgent medical assistance for persons requiring professional medical attention or hospitalisation
- KU37. the appropriate documentation to be carried out following a health and safety incident at work, and the relevant information to be included
- KU38. the importance and process of reviewing the health and safety conditions at work regularly or following an incident
- KU39. the importance and process of implementing appropriate changes to improve the health and safety conditions at work

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. maintain work-related notes and records
- GS2. communicate clearly and politely with co-workers and clients
- GS3. read the relevant literature to get the latest updates about the field of work
- GS4. listen attentively to understand the information being shared
- GS5. plan and prioritise tasks to ensure timely completion
- GS6. take quick decisions to deal with workplace emergencies and accidents
- GS7. identify possible disruptions to work and take appropriate preventive measures
- GS8. coordinate with the co-workers to achieve the work objectives
- GS9. evaluate all possible solutions to a problem to select the best one

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain personal health and safety</i>	7	12	-	-
PC1. follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask	2	3	-	-
PC2. check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them	1	2	-	-
PC3. select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions	1	2	-	-
PC4. follow the recommended techniques while lifting and moving heavy objects to avoid injury	1	3	-	-
PC5. follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment	2	2	-	-
<i>Assist in hazard management</i>	4	10	-	-
PC6. identify existing and potential hazards at work	1	1	-	-
PC7. assess the potential risks and injuries associated with the identified hazards	1	3	-	-
PC8. coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards	1	3	-	-
PC9. handle hazardous materials safely and store them in the designated storage	1	3	-	-
<i>Check the first aid box, firefighting and safety equipment</i>	3	7	-	-
PC10. check the first aid box to ensure it is updated with the relevant first aid supplies	1	2	-	-
PC11. check and test the firefighting and various safety equipment to ensure they are in usable condition	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. coordinate with the supervisor for the repair and replacement of firefighting and safety equipment	1	2	-	-
<i>Assist in waste management</i>	3	8	-	-
PC13. segregate waste into appropriate categories	1	3	-	-
PC14. recycle the recyclable waste appropriately	1	3	-	-
PC15. dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations	1	2	-	-
<i>Follow the fire safety guidelines</i>	3	12	-	-
PC16. use the appropriate type of fire extinguisher to extinguish different types of fires safely	1	4	-	-
PC17. follow the recommended practices for a safe rescue during a fire emergency	1	4	-	-
PC18. coordinate with the fire department to request assistance to extinguish a serious fire	1	4	-	-
<i>Follow the emergency and first-aid procedures</i>	7	12	-	-
PC19. follow the organisational health and safety guidelines during workplace emergencies to ensure own and co-workers' safety	1	2	-	-
PC20. follow the recommended practices to minimise loss to organisational property during an emergency	1	3	-	-
PC21. follow the recommended procedure to free a person from electrocution	1	2	-	-
PC22. administer appropriate first aid to the injured personnel	1	2	-	-
PC23. perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest	1	2	-	-
PC24. coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation	2	1	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out relevant documentation and review</i>	3	9	-	-
PC25. carry out appropriate documentation following a health and safety incident at work, including all the required information	1	3	-	-
PC26. coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident	1	3	-	-
PC27. assist in implementing appropriate changes to improve the health and safety conditions at work	1	3	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N1335
<b>NOS Name</b>	Follow the health and safety practices at the work
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools, Process Plant Machinery, Dies, Moulds and Press Tools, Electrical and Power Machinery, Plastics Manufacturing Machinery, Light Engineering Goods, Textile Manufacturing Machinery
<b>Occupation</b>	Machining
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	01/10/2025
<b>Next Review Date</b>	01/10/2028
<b>NSQC Clearance Date</b>	01/10/2025

## Qualification Pack

### CSC/N1336: Coordinate with co-workers to achieve work efficiency

#### Description

This OS unit is about working in coordination with co-workers to achieve the work objectives efficiently. It also covers practising inclusion at work.

#### Scope

The scope covers the following :

- Work effectively with co-workers
- Communicate effectively with co-workers
- Practice inclusion at work

#### Elements and Performance Criteria

##### *Work effectively with co-workers*

To be competent, the user/individual on the job must be able to:

- PC1. plan daily tasks at work to ensure their timely completion and efficient use of time
- PC2. carry out work responsibilities adhering to the limits of authority
- PC3. follow the supervisor's instructions to ensure adherence to the applicable quality standards and timescales
- PC4. coordinate with the co-workers to achieve the work objectives efficiently
- PC5. prepare the relevant documents and reports as per the supervisor's instructions, providing appropriate information clearly and systematically
- PC6. coordinate with the supervisor or relevant personnel to deal with out of authority tasks and concerns
- PC7. mentor and assist subordinates in the execution of their work responsibilities
- PC8. identify possible disruptions to work through coordination with the relevant stakeholders and take appropriate preventive measures
- PC9. use various resources efficiently to ensure maximum utilisation and minimum wastage
- PC10. follow the recommended practices to avoid and resolve conflicts at work
- PC11. follow the relevant organisational policies to ensure disciplined behaviour with maximum productivity at work

##### *Communicate effectively with co-workers*

To be competent, the user/individual on the job must be able to:

- PC12. follow the organisational policy for the efficient and timely dissemination of information to the authorised personnel
- PC13. communicate clearly and politely to ensure effective communication with co-workers
- PC14. follow the appropriate techniques for active listening during interactions

##### *Practice inclusion at work*

To be competent, the user/individual on the job must be able to:

- PC15. empathise with Persons with Disabilities (PwD)

## Qualification Pack

PC16. adopt gender-neutral behaviour at work

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. the importance and process of effective communication in the workplace
- KU2. the barriers to effective communication and how to overcome them
- KU3. the importance of teamwork in an organisation's and individual's success
- KU4. the importance of active listening in the work environment
- KU5. the appropriate techniques to be followed for active listening
- KU6. importance of avoiding casual expletives and unpleasant terms while communicating professional circles
- KU7. the importance of maintaining discipline and ethical behaviour at work
- KU8. the common reasons for interpersonal conflict and how to resolve them
- KU9. the importance of developing effective work relationships for professional success
- KU10. how expressing and addressing grievances appropriately and effectively
- KU11. the importance and process of planning daily tasks to ensure their timely completion and efficient use of time
- KU12. the importance of adhering to the limits of authority at work
- KU13. the importance of following the applicable quality standards and timescales at work
- KU14. the importance of coordinating with the co-workers to achieve the work objectives efficiently
- KU15. the relevant documentation requirements
- KU16. the importance of providing appropriate information clearly and systematically in work documents
- KU17. the escalation matrix to be followed to deal with out of authority tasks and concerns
- KU18. the importance and process of mentoring and assisting subordinates in the execution of their work responsibilities
- KU19. how to identify possible disruptions to work prevent them
- KU20. how to use various resources efficiently to ensure maximum utilisation and minimum wastage
- KU21. the recommended practices to be followed at work to avoid and resolve conflicts at work
- KU22. the importance and process of efficient and timely dissemination of information to the authorised personnel
- KU23. how to communicate clearly and politely to ensure effective communication
- KU24. the importance of following the recommended practices to ensure an inclusive environment for PwD and all genders at work

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. maintain work-related notes and records



## Qualification Pack

- GS2. read work-related and other relevant literature
- GS3. communicate politely and -professionally
- GS4. listen attentively to understand the information or instructions being shared
- GS5. plan and prioritise tasks to ensure timely completion
- GS6. take prompt decisions to deal with workplace emergencies and accidents
- GS7. evaluate all possible solutions to a problem to select the best one

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Work effectively with co-workers</i>	20	43	-	-
PC1. plan daily tasks at work to ensure their timely completion and efficient use of time	2	4	-	-
PC2. carry out work responsibilities adhering to the limits of authority	2	4	-	-
PC3. follow the supervisor's instructions to ensure adherence to the applicable quality standards and timescales	2	4	-	-
PC4. coordinate with the co-workers to achieve the work objectives efficiently	2	4	-	-
PC5. prepare the relevant documents and reports as per the supervisor's instructions, providing appropriate information clearly and systematically	2	4	-	-
PC6. coordinate with the supervisor or relevant personnel to deal with out of authority tasks and concerns	2	4	-	-
PC7. mentor and assist subordinates in the execution of their work responsibilities	2	4	-	-
PC8. identify possible disruptions to work through coordination with the relevant stakeholders and take appropriate preventive measures	2	4	-	-
PC9. use various resources efficiently to ensure maximum utilisation and minimum wastage	2	4	-	-
PC10. follow the recommended practices to avoid and resolve conflicts at work	1	4	-	-
PC11. follow the relevant organisational policies to ensure disciplined behaviour with maximum productivity at work	1	3	-	-
<i>Communicate effectively with co-workers</i>	6	15	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. follow the organisational policy for the efficient and timely dissemination of information to the authorised personnel	2	5	-	-
PC13. communicate clearly and politely to ensure effective communication with co-workers	2	5	-	-
PC14. follow the appropriate techniques for active listening during interactions	2	5	-	-
<i>Practice inclusion at work</i>	4	12	-	-
PC15. empathise with Persons with Disabilities (PwD)	2	6	-	-
PC16. adopt gender-neutral behaviour at work	2	6	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N1336
<b>NOS Name</b>	Coordinate with co-workers to achieve work efficiency
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools, Dies, Moulds and Press Tools, Plastics Manufacturing Machinery, Textile Manufacturing Machinery, Process Plant Machinery, Electrical and Power Machinery, Light Engineering Goods
<b>Occupation</b>	Machining
<b>NSQF Level</b>	3
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	01/10/2025
<b>Next Review Date</b>	01/10/2028
<b>NSQC Clearance Date</b>	01/10/2025

## Qualification Pack

# CSC/N0304: Perform Precision fitting and Mechanical assembly operations using Digital Technologies (using Digital tools/Digital read outs).

## Description

The unit is about to Perform Precision fitting and Mechanical assembly operations using Digital Technologies (using Digital tools/Digital read outs).

## Scope

The scope covers the following :

- Prepare for work
- Perform marking on the components
- Perform fitting operations
- Perform assembling operations using Digital Technologies
- Perform post-assembly activities

## Elements and Performance Criteria

### *Prepare for work*

To be competent, the user/individual on the job must be able to:

- PC1. identify work requirements by interpreting engineering drawings and instructions; planning documentation; quality control documents; operation sheets; process specifications etc. and instructions received from supervisor
- PC2. select the appropriate fitting and fabrication operations need to perform on the basis of drawing information
- PC3. identify and arrange the material, tools, measuring instruments, equipment, parts and subassemblies required for the job
- PC4. check the tools and equipment for any defects before use
- PC5. check that all measuring equipment are within calibration date
- PC6. use appropriate Personal Protective Equipment (PPE) for safe working in workshop

### *Perform marking on the components*

To be competent, the user/individual on the job must be able to:

- PC7. prepare suitable datum on the component from which mark out has to be start (e.g. choosing a machine face or filing a flat face as a datum)
- PC8. apply a marking medium to enhance clarity of the marking out
- PC9. use a range of marking out equipment and mark the dimensions on the component by applying an appropriate method of marking out
- PC10. mark out a range of features (Features: datum lines; cutting guidelines; square and rectangular profiles; circular and radial profiles; angles; holes linearly positioned, boxed and on pitch circles) on the component

### *Perform fitting operations*

To be competent, the user/individual on the job must be able to:

- PC11. plan the fitting activities before starting

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PC12. cut and shape the materials to the required specification by using appropriate cutting operations and techniques

PC13. use a range of fitting methods and perform fitting operations on the component as per SOP

PC14. use a range of manually operated machines for performing machining operations on the component as per SOP

### *Perform Assembling Operations using Digital Technologies*

To be competent, the user/individual on the job must be able to:

PC15. assemble and secure the components and sub-assemblies in their correct positions by using appropriate assembly methods and Digital techniques

PC16. perform drilling, tapping and reaming operation to create holes in the components as per the requirement

PC17. fasten components permanently by using engineered fasteners, applying adhesives, soldering and brazing

PC18. Use of Digital Tools to produce mechanical assemblies by combining the components as per job specifications

PC19. dismantle mechanical assemblies without damage to components and/or subassemblies

PC20. • report to the supervisor about any problems faced or anticipated during the complete  
• process

### *Perform post-assembly activities*

To be competent, the user/individual on the job must be able to:

PC21. perform necessary quality checks or tests for correct assembly, dimensional accuracy and required quality standards

PC22. use the appropriate measuring equipment for checking activities

PC23. prepare inspection and work completion reports for the higher authorities

PC24. clean and store all the tools, machine and equipment after completion of work

PC25. dispose scrap or waste material into the disposal area in accordance with the company's policies and environmental regulations

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures followed in the organization

KU2. various job requirements such as raw materials or components required (type, quality, quantity), dimensions, limits and tolerances, operations required (list, sequence and procedures where applicable), shapes or profiles to be fabricated, cutting, bending for fabricated forms, instruments and tools to be used, interdependencies, timelines etc. for fitting and assembly work

KU3. how to interpret engineering drawings, imperial and metric systems of measurement, workpiece reference points and system of tolerancing (Geometric Dimensioning and Tolerancing -- GD&T)

KU4. • how to prepare the component for the marking out activities  
• Preparation of components: visually checking for defects, cleaning the materials, removing burrs and sharp edges, etc.

KU5. how to select and establish a suitable datum

## Qualification Pack

- KU6.** possible effects of working from an incorrect datum
- KU7.** importance of ensuring that marking out is undertaken from the selected datum
- KU8.** SOP recommended by manufacturer for using various marking tools i.e. rules/tapes, dividers/trammels, scribes, punches, scribing blocks, squares, protractor, permanent markers
- KU9.** various marking out methods e.g. direct marking using tapes and markers, set-outs of pipework using templates, producing set wires, set-outs of pipework onto floor
- KU10.** SOP recommended by manufacturer for using various tools and equipment required during cutting and preparation of components
- KU11.** various cutting techniques i.e. cutting out the rough profile using saws (e.g. hacksaw, chop saw, power saw), or oxy-fuel gas cutting torch, de-burring reamers, rubbing with abrasive cloth, drilling holes etc.
- KU12.** various manually operated machine tools i.e. manual grinding machines (Ag4, wolf grinding machine, etc.), drills (power drills, pedestal drills), punching machines, threading machines
- KU13.** various fitting activities .i.e. file flat, square and curved surfaces and achieve a smooth surface finish, select saw blades for different materials, and how to set the saw blades for different operations, produce screw threads on workpieces using hand dies , tighten torque with torque wrenches, determine the drill size for tapped holes , and the importance of using the taps in the correct sequence
- KU14.** methods of holding the workpiece for the hand fitting, drilling threading and tapping activities
- KU15.** various assembly methods i.e. assembling components having interference fits (e.g. by pressure, expansion or contraction) , securing components using threaded fasteners (e.g. nuts, bolts, machine screws, cap screws) , securing components using spring clips (e.g. external circlips, internal circlips, special clips) , using locking and retaining devices (e.g. tab washers, locking nuts, wire locks, special purpose types) , securing components using rivets (e.g. countersunk, roundhead, blind)
- KU16.** • how the components are to be aligned, adjusted and positioned prior to securing them, and the tools and equipment  
 • Alignment: slideways: flat, vee, dovetail, cylindrical, comparison of their capabilities, main features, accuracy of movement, means of adjustment, lubrication, protection  
 • Typical checks: coaxial alignment between main spindle axis, coaxial alignment between two spindles, alignment of spindle to guideway, squareness of slideways movement, concentricity and end float of spindle
- KU17.** methods to dismantle fittings i.e. procedure for isolation and locking off a device/system , sequence of operations used to dismantle a device/system , proof marking, correct storage procedures for removed parts , release of pressure/force , extraction
- KU18.** various adhesives and sealing compounds that are used on non-metallic pipework
- KU19.** precautions to be taken when using the adhesives, cements and sealing compounds (such as adequate ventilation, fume extraction, away from naked flames, avoiding skin contact) and gas torches to form the joint
- KU20.** mechanical fastenings and joining techniques i.e. non-permanent - nuts, bolts, studs, permanent - welded, soldered, brazed, riveted
- KU21.** methods of mounting, positioning, aligning and securing the workpiece
- KU22.** techniques of taking trial cuts and checking dimensional accuracy
- KU23.** • application of cutting fluids and compounds with regard to a range of different materials  
 • Range of materials: Ferrous metals: e.g. carbon steels, stainless steels , cast iron, tool steel, hard metals , Non-ferrous metals: e.g. bronze, aluminium, copper and copper alloys

## Qualification Pack

- KU24.**
- how to check the workpiece and the measuring equipment that is used
  - Measuring equipment: external micrometers, vernier/digital/dial caliper, surface finish equipment (e.g. comparison plates, machines), rules, squares, protractors, depth micrometers, depth verniers, feeler gauges, bore/hole gauges, slip gauges, radius/profile gauges, thread gauges, height gauge, hardness tester, dial test indicators (DTI), surface roughness tester, coordinate measuring machine (CMM), profile projectors
- KU25.** how to measure internal and external dimensions

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyse the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognise a workplace problem and take suitable action to resolve it

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for work</i>	8	9	-	7
PC1. identify work requirements by interpreting engineering drawings and instructions; planning documentation; quality control documents; operation sheets; process specifications etc. and instructions received from supervisor	1	1	-	1
PC2. select the appropriate fitting and fabrication operations need to perform on the basis of drawing information	2	2	-	3
PC3. identify and arrange the material, tools, measuring instruments, equipment, parts and subassemblies required for the job	3	2	-	2
PC4. check the tools and equipment for any defects before use	1	2	-	1
PC5. check that all measuring equipment are within calibration date	1	1	-	-
PC6. use appropriate Personal Protective Equipment (PPE) for safe working in workshop	2	1	-	-
<i>Perform marking on the components</i>	5	7	-	3
PC7. prepare suitable datum on the component from which mark out has to be start (e.g. choosing a machine face or filing a flat face as a datum)	1	1	-	1
PC8. apply a marking medium to enhance clarity of the marking out	1	1	-	-
PC9. use a range of marking out equipment and mark the dimensions on the component by applying an appropriate method of marking out	2	3	-	-
PC10. mark out a range of features (Features: datum lines; cutting guidelines; square and rectangular profiles; circular and radial profiles; angles; holes linearly positioned, boxed and on pitch circles) on the component	1	2	-	2
<i>Perform fitting operations</i>	7	11	-	3

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. plan the fitting activities before starting	1	2	-	-
PC12. cut and shape the materials to the required specification by using appropriate cutting operations and techniques	2	3	-	1
PC13. use a range of fitting methods and perform fitting operations on the component as per SOP	2	3	-	1
PC14. use a range of manually operated machines for performing machining operations on the component as per SOP	2	3	-	1
<i>Perform Assembling Operations using Digital Technologies</i>	6	14	-	5
PC15. assemble and secure the components and sub-assemblies in their correct positions by using appropriate assembly methods and Digital techniques	2	4	-	2
PC16. perform drilling, tapping and reaming operation to create holes in the components as per the requirement	2	3	-	1
PC17. fasten components permanently by using engineered fasteners, applying adhesives, soldering and brazing	1	2	-	1
PC18. Use of Digital Tools to produce mechanical assemblies by combining the components as per job specifications	-	2	-	-
PC19. dismantle mechanical assemblies without damage to components and/or subassemblies	1	2	-	1
PC20. • report to the supervisor about any problems faced or anticipated during the complete • process	-	1	-	-
<i>Perform post-assembly activities</i>	4	9	-	2
PC21. perform necessary quality checks or tests for correct assembly, dimensional accuracy and required quality standards	2	3	-	1

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. use the appropriate measuring equipment for checking activities	-	1	-	-
PC23. prepare inspection and work completion reports for the higher authorities	1	2	-	1
PC24. clean and store all the tools, machine and equipment after completion of work	1	2	-	-
PC25. dispose scrap or waste material into the disposal area in accordance with the company's policies and environmental regulations	-	1	-	-
<b>NOS Total</b>	<b>30</b>	<b>50</b>	<b>-</b>	<b>20</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0304
<b>NOS Name</b>	Perform Precision fitting and Mechanical assembly operations using Digital Technologies (using Digital tools/Digital read outs).
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Machine Tools, Process Plant Machinery, Dies, Moulds and Press Tools, Electrical and Power Machinery, Plastics Manufacturing Machinery, Light Engineering Goods, Textile Manufacturing Machinery
<b>Occupation</b>	Fabrication, Fitting and Assembly
<b>NSQF Level</b>	3
<b>Credits</b>	9
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	08/05/2025
<b>Next Review Date</b>	30/04/2028
<b>NSQC Clearance Date</b>	08/05/2025

## Qualification Pack

### DGT/VSQ/N0101: Employability Skills (30 Hours)

#### Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

#### Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

#### Elements and Performance Criteria

##### *Introduction to Employability Skills*

To be competent, the user/individual on the job must be able to:

PC1. understand the significance of employability skills in meeting the job requirements

##### *Constitutional values - Citizenship*

To be competent, the user/individual on the job must be able to:

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

##### *Becoming a Professional in the 21st Century*

To be competent, the user/individual on the job must be able to:

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

##### *Basic English Skills*

To be competent, the user/individual on the job must be able to:

PC4. speak with others using some basic English phrases or sentences

##### *Communication Skills*

To be competent, the user/individual on the job must be able to:

PC5. follow good manners while communicating with others

PC6. work with others in a team

## Qualification Pack

### *Diversity & Inclusion*

To be competent, the user/individual on the job must be able to:

- PC7. communicate and behave appropriately with all genders and PwD
- PC8. report any issues related to sexual harassment

### *Financial and Legal Literacy*

To be competent, the user/individual on the job must be able to:

- PC9. use various financial products and services safely and securely
- PC10. calculate income, expenses, savings etc.
- PC11. approach the concerned authorities for any exploitation as per legal rights and laws

### *Essential Digital Skills*

To be competent, the user/individual on the job must be able to:

- PC12. operate digital devices and use its features and applications securely and safely
- PC13. use internet and social media platforms securely and safely

### *Entrepreneurship*

To be competent, the user/individual on the job must be able to:

- PC14. identify and assess opportunities for potential business
- PC15. identify sources for arranging money and associated financial and legal challenges

### *Customer Service*

To be competent, the user/individual on the job must be able to:

- PC16. identify different types of customers
- PC17. identify customer needs and address them appropriately
- PC18. follow appropriate hygiene and grooming standards

### *Getting ready for apprenticeship & Jobs*

To be competent, the user/individual on the job must be able to:

- PC19. create a basic biodata
- PC20. search for suitable jobs and apply
- PC21. identify and register apprenticeship opportunities as per requirement

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. need for employability skills
- KU2. various constitutional and personal values
- KU3. different environmentally sustainable practices and their importance
- KU4. Twenty first (21st) century skills and their importance
- KU5. how to use basic spoken English language
- KU6. Do and dont of effective communication
- KU7. inclusivity and its importance
- KU8. different types of disabilities and appropriate communication and behaviour towards PwD
- KU9. different types of financial products and services

## Qualification Pack

- KU10. how to compute income and expenses
- KU11. importance of maintaining safety and security in financial transactions
- KU12. different legal rights and laws
- KU13. how to operate digital devices and applications safely and securely
- KU14. ways to identify business opportunities
- KU15. types of customers and their needs
- KU16. how to apply for a job and prepare for an interview
- KU17. apprenticeship scheme and the process of registering on apprenticeship portal

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. communicate effectively using appropriate language
- GS2. behave politely and appropriately with all
- GS3. perform basic calculations
- GS4. solve problems effectively
- GS5. be careful and attentive at work
- GS6. use time effectively
- GS7. maintain hygiene and sanitisation to avoid infection

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
<i>Constitutional values - Citizenship</i>	1	1	-	-
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	1	3	-	-
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
<i>Communication Skills</i>	1	1	-	-
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	1	1	-	-
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
<i>Financial and Legal Literacy</i>	3	4	-	-
PC9. use various financial products and services safely and securely	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. calculate income, expenses, savings etc.	-	-	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
<i>Essential Digital Skills</i>	<b>4</b>	<b>6</b>	-	-
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
<i>Entrepreneurship</i>	<b>3</b>	<b>5</b>	-	-
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
<i>Customer Service</i>	<b>2</b>	<b>2</b>	-	-
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>1</b>	<b>3</b>	-	-
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Next Review Date	07/10/2028

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for the Qualification Pack will be created by CGSC.
2. Performance Criteria (PC) have been assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
3. The assessment for the theory part will/may be based on knowledge bank of questions approved CGSC.
4. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
5. Assessment Agencies will create Assessor Guides comprising of Theory and Practical Assessment Set and Guidelines for each examination/training centre (as per assessment criteria below). The same will be approved by CGSC for adequacy.
6. To successfully attain Certification on the Qualification Pack, the trainee must score a minimum of 70% in each Core NOS and minimum of 70% in all non-core NOS. In addition, a candidate needs to attain a minimum overall pass percentage of 70% for certification.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

### Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to

## Qualification Pack

successfully clear the Qualification Pack assessment.)

### Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CSC/N1335.Follow the health and safety practices at the work	30	70	-	-	100	15
CSC/N1336.Coordinate with co-workers to achieve work efficiency	30	70	-	-	100	10
CSC/N0304.Perform Precision fitting and Mechanical assembly operations using Digital Technologies (using Digital tools/Digital read outs).	30	50	-	20	100	70
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	5
<b>Total</b>	<b>110</b>	<b>220</b>	<b>-</b>	<b>20</b>	<b>350</b>	<b>100</b>

## Qualification Pack

### Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training
<b>GD&amp;T</b>	Geometric Dimensioning And Tolerancing
<b>DTI</b>	Dial Test Indicators
<b>CMM</b>	Coordinate Masuring Machine
<b>ECM</b>	Electrochemical Machining
<b>BODMAS</b>	Brackets/ Of/ Division/ Multiplication/ Addition/ Subtraction
<b>CO2</b>	Carbon Dioxide
<b>CPR</b>	Cardiac Pulmonary Resuscitation
<b>PPE</b>	Personal Protective Equipment

## Qualification Pack

### Glossary

<b>Sector</b>	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	Scope is a 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 quality of performance required.

## Qualification Pack

<b>Knowledge and Understanding (KU)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
<b>Organisational Context</b>	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment 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.
<b>Electives</b>	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
<b>Options</b>	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.