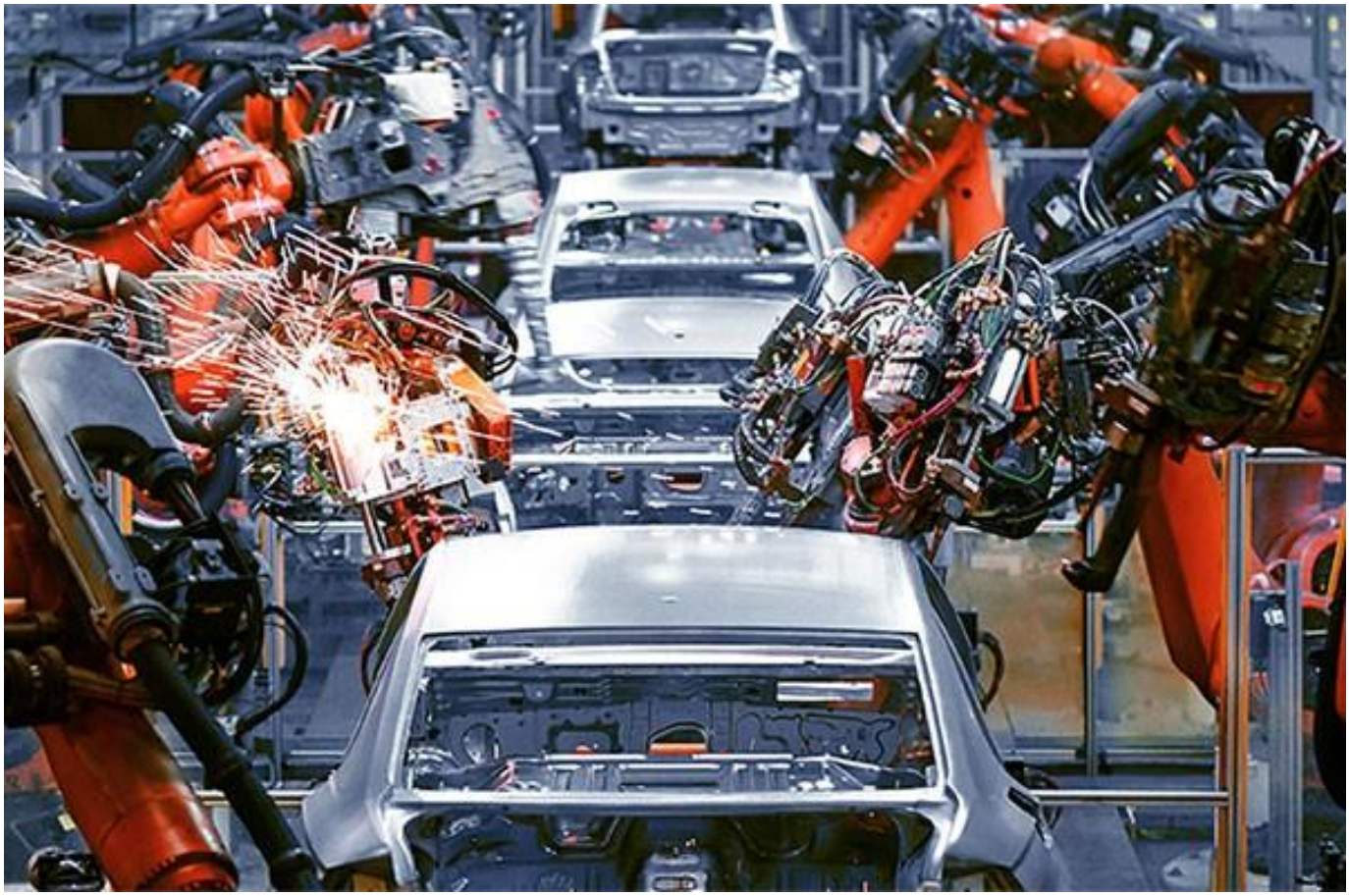

Automotive Welding Machine Trainer

QP Code: ASC/Q3110

Version: 1.0

NSQF Level: 5

Automotive Skills Development Council || 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building
New Delhi – 110020

Contents

ASC/Q3110: Automotive Welding Machine Trainer

Brief Job Description

The individual is using pre-set lesson plans and training materials to plan and conduct training sessions for welding team to impart competency based skills and knowledge

Personal Attributes

The individual must have strong communication, organisational and interpersonal skills. They must be quality focused and encourage learner engagement. Additionally, they should remain abreast with the latest trends in their domain and upgrade their facilitation skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ASC/N9810: Manage work and resources (Manufacturing)
2. ASC/N9812: Interact effectively with team, customers and others
3. ASC/N9805: Interpret engineering drawing
4. ASC/N3117: Plan and deliver competency based, instructor-led training sessions for welding operations as per session plan
5. ASC/N3118: Evaluation and assessment of welders
6. ASC/N3119: Conduct technical training of welding team

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Metal Joining
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3122.4702

Minimum Educational Qualification & Experience	10th Class + I.T.I (Welder) with 2 Years of relevant experience OR 12th Class with 4 years relevant experience OR 3 years Diploma (Mechanical/Automobile) from a recognized body (after class 12th) OR Certificate-NSQF (Automotive Welding Machine Technician Level 4)) with 2 Years of relevant experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	25/11/2021
Next Review Date	25/11/2026
NSQC Approval Date	25/11/2021
Version	1.0

ASC/N9810: Manage work and resources (Manufacturing)

Description

This NOS unit is about implementing safety, planning work, adopting sustainable practices for optimising the use of resources.

Scope

The scope covers the following :

- Maintain safe and secure working environment
- Maintain Health and Hygiene
- Effective waste management practices
- Material/energy conservation practices

Elements and Performance Criteria

Maintain safe and secure working environment

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

PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace

PC2. implement safe working practices for dealing with hazards to ensure safety of self and others

PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards

PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions

PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices

PC6. fill daily check sheet to report improvements done and risks identified

PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others

PC8. report any identified breaches in health, safety and security policies and procedures to the designated person

Maintain Health and Hygiene

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

PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly

PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor

PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace

PC12. report advanced hygiene and sanitation issues to appropriate authority

PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc

PC14. wear and dispose PPEs regularly and appropriately

Effective waste management practices

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

PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP

PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste

Material/energy conservation practices

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

PC17. ensure malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively

PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water

PC19. identify possibilities of using renewable energy and environment friendly fuels

PC20. identify processes where material and energy/electricity utilization can be optimized

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation procedures for health, safety and security, individual role and responsibilities in this context

KU2. the organisation's emergency procedures for different emergency situations and the importance of following the same

KU3. evacuation procedures for workers and visitors

KU4. how and when to report hazards as well as the limits of responsibility for dealing with hazards

KU5. potential hazards, risks and threats based on the nature of work

KU6. various types of fire extinguisher

KU7. various types of safety signs and their meaning

KU8. appropriate first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.

KU9. relevant standards, procedures and policies related to 5S followed in the company

KU10. the various materials used and their storage norms

KU11. importance of efficient utilisation of material and water

KU12. basics of electricity and prevalent energy efficient devices

KU13. common practices of conserving electricity

KU14. common sources and ways to minimize pollution

KU15. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics

KU16. waste management techniques

KU17. significance of greening

Generic Skills (GS)

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

GS1. read safety instructions/guidelines
GS2. modify work practices to improve them
GS3. work with supervisors/team members to carry out work related tasks
GS4. complete tasks efficiently and accurately within stipulated time
GS5. inform/report to concerned person in case of any problem
GS6. make timely decisions for efficient utilization of resources
GS7. write reports such as accident report, in at least English/regional language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain safe and secure working environment	20	13	-	8
PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	4	2	-	2
PC2. implement safe working practices for dealing with hazards to ensure safety of self and others	3	1	-	2
PC3. conduct regular checks of the machines with support of the maintenance team to identify potential hazards	2	2	-	1
PC4. ensure that all the tools/equipment/fasteners/spare parts are arranged as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/work instructions	3	2	-	1
PC5. organise safety drills or training sessions to create awareness amongst others on the identified risks and safety practices	2	-	-	-
PC6. fill daily check sheet to report improvements done and risks identified	2	2	-	-
PC7. ensure that relevant safety boards/signs are placed on the shop floor for the safety of self and others	2	2	-	1
PC8. report any identified breaches in health, safety and security policies and procedures to the designated person	2	2	-	1
Maintain Health and Hygiene	13	7	-	5
PC9. ensure workplace, equipment, restrooms etc. are sanitized regularly	3	2	-	1
PC10. ensure team is aware about hygiene and sanitation regulations and following them on the shop floor	2	1	-	-
PC11. ensure availability of running water, hand wash and alcohol-based sanitizers at the workplace	2	2	-	1
PC12. report advanced hygiene and sanitation issues to appropriate authority	1	1	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. follow stress and anxiety management techniques and support employees to cope with stress, anxiety etc	2	1	-	1
PC14. wear and dispose PPEs regularly and appropriately	3	-	-	1
Effective waste management practices	6	4	-	1
PC15. ensure recyclable, non-recyclable and hazardous wastes are segregated as per SOP	3	2	-	-
PC16. ensure proper mechanism is followed while collecting and disposing of non-recyclable, recyclable and reusable waste	3	2	-	1
Material/energy conservation practices	11	6	-	6
PC17. ensure malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment are resolved effectively	2	2	-	1
PC18. prepare and analyze material and energy audit reports to decipher excessive consumption of material and water	3	2	-	1
PC19. identify possibilities of using renewable energy and environment friendly fuels	3	1	-	2
PC20. identify processes where material and energy/electricity utilization can be optimized	3	1	-	2
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9810
NOS Name	Manage work and resources (Manufacturing)
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	25/11/2021
Next Review Date	25/11/2026
NSQC Clearance Date	25/11/2021

ASC/N9812: Interact effectively with team, customers and others

Description

This unit is about communicating with team members, superior and others.

Scope

The scope covers the following :

- Communicate effectively with team members
- Interact with superiors
- Respect gender and ability differences

Elements and Performance Criteria

Communicate effectively with team members

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

PC1. implement ways to share information with team members in line with organisational requirements

PC2. ensure that work requirements are clearly communicated to the team members through all means including face-to-face, telephonic and written

PC3. manage and co-ordinate with team members to integrate work as per requirements

PC4. work in a way that show respect for all team members and customers

PC5. carry out commitments made to team members and let them know in good time if there is any discrepancy with reasons

PC6. resolve conflicts within the team members at work to achieve smooth workflow

PC7. guide the team members to follow the organisation's policies and procedures

PC8. ensure team goals are given preference over individual goals

PC9. respect personal space of colleagues and customers

Interact with superiors

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

PC10. report progress on job allocated and team performance to the superiors

PC11. escalate problems to superiors that cannot be handled

PC12. train the team members to report completed work and receive feedback on work done

PC13. encourage team members to rectify errors as per feedback and minimize mistakes in future

Respect gender and ability differences

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

PC14. ensure team shows sensitivity towards all genders and PwD

PC15. adjust communication styles to reflect gender sensitivity and sensitivity towards person with disability

PC16. help PwD team members to overcome the challenges, if asked

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance of effective communication and establishing good working relationships with team members and superiors
KU2. different methods of communication as per the circumstances
KU3. gender based concepts, issues and legislation
KU4. organisation standards and guidelines to be followed for PwD
KU5. rights and duties at workplace with respect to PwD
KU6. organisation policies and procedures pertaining to written and verbal communication

Generic Skills (GS)

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

GS1. read safety instructions/guidelines
GS2. modify work practices to improve them
GS3. work with supervisors/team members to carry out work related tasks
GS4. complete tasks efficiently and accurately within stipulated time
GS5. make timely decisions for efficient utilization of resources
GS6. read instructions/guidelines/procedures
GS7. write in English/any one language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively with team members	20	14	-	8
PC1. implement ways to share information with team members in line with organisational requirements	2	2	-	-
PC2. ensure that work requirements are clearly communicated to the team members through all means including face-to-face, telephonic and written	2	2	-	2
PC3. manage and co-ordinate with team members to integrate work as per requirements	2	1	-	2
PC4. work in a way that show respect for all team members and customers	3	1	-	2
PC5. carry out commitments made to team members and let them know in good time if there is any discrepancy with reasons	2	2	-	-
PC6. resolve conflicts within the team members at work to achieve smooth workflow	3	2	-	-
PC7. guide the team members to follow the organisation's policies and procedures	2	1	-	-
PC8. ensure team goals are given preference over individual goals	2	1	-	-
PC9. respect personal space of colleagues and customers	2	2	-	2
Interact with superiors	18	10	-	7
PC10. report progress on job allocated and team performance to the superiors	4	3	-	2
PC11. escalate problems to superiors that cannot be handled	4	2	-	1
PC12. train the team members to report completed work and receive feedback on work done	5	2	-	2
PC13. encourage team members to rectify errors as per feedback and minimize mistakes in future	5	3	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Respect gender and ability differences	12	6	-	5
PC14. ensure team shows sensitivity towards all genders and PwD	4	2	-	2
PC15. adjust communication styles to reflect gender sensitivity and sensitivity towards person with disability	4	2	-	2
PC16. help PwD team members to overcome the challenges, if asked	4	2	-	1
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9812
NOS Name	Interact effectively with team, customers and others
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	25/11/2021
Next Review Date	25/11/2026
NSQC Clearance Date	25/11/2021

ASC/N9805: Interpret engineering drawing

Description

This NOS unit is about reading and interpreting all concepts, symbols, methods, views, etc. of engineering drawing.

Scope

The scope covers the following :

- Interpret information from various views, projection, 2D and 3D shapes
- Identify drawing standards and symbols
- Modification and storage of drawing

Elements and Performance Criteria

Interpret information from various views, projection, 2D and 3D shapes

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

PC1. interpret engineering drawing's uniqueness, dimensions and important features in 2D and 3D shapes

PC2. identify the difference between 2D and 3D shapes

PC3. explain difference between first angle projection and third angle projection in mechanical engineering drawing

PC4. interpret all the 3 axes (x, y and z axis) and geometrical shapes (cones, cylinder, sphere, cuboid, etc) on to a 2D and 3D projection

PC5. identify details of the machine component which are not clearly visible by interpreting section views

Identify drawing standards and symbols

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

PC6. interpret Geometric Dimensioning and Tolerencing (GD&T) symbols in the drawings

PC7. interpret symbols of Radius, controlled radius, spherical radius, diameter, spherical diameter, square, counterbore, spotface, depth, countersink, “by”, maximum dimension, minimum dimension, reference, dimension origin etc

PC8. identify the sequence of operations which enables the selection and prioritization of the datums

PC9. read and interpret information from Tolerance Zone boundaries for part features in terms of shape and size

Modification and storage of drawing

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

PC10. observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization

PC11. store the drawings in an easily accessible place, avoiding damage from moisture, chemicals and fire

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant organisational standards such as work standard, Standard Operating Procedure, quality process, maintenance standards etc. followed in the company
KU2. importance of cycle-time and required output as per work order and work instructions
KU3. drawing standards used by the company
KU4. use of drawing tools such as scales, compass, types of pencils, CAD and CAM software etc.
KU5. the basics of engineering drawing, orthographic projection, isometric projection, GD&T etc.
KU6. importance of various projections, views, symbols and dimensions of drawing
KU7. use of geometric shapes like lines, angles, circles, etc for interpreting the drawing

Generic Skills (GS)

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

GS1. read and interpret workplace related drawing
GS2. communicate the changes and requirements to supervisor by using relevant drawing terms and nomenclature
GS3. attentively listen and comprehend the information given by the supervisor/team members
GS4. write in English/regional language
GS5. recognise problem in drawing and take suitable action
GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Interpret information from various views, projection, 2D and 3D shapes	21	11	-	10
PC1. interpret engineering drawing's uniqueness, dimensions and important features in 2D and 3D shapes	5	3	-	2
PC2. identify the difference between 2D and 3D shapes	4	2	-	2
PC3. explain difference between first angle projection and third angle projection in mechanical engineering drawing	4	-	-	2
PC4. interpret all the 3 axes (x, y and z axis) and geometrical shapes (cones, cylinder, sphere, cuboid, etc) on to a 2D and 3D projection	5	3	-	2
PC5. identify details of the machine component which are not clearly visible by interpreting section views	3	3	-	2
Identify drawing standards and symbols	23	15	-	8
PC6. interpret Geometric Dimensioning and Tolerencing (GD&T) symbols in the drawings	6	4	-	2
PC7. interpret symbols of Radius, controlled radius, spherical radius, diameter, spherical diameter, square, counterbore, spotface, depth, countersink, “by”, maximum dimension, minimum dimension, reference, dimension origin etc	6	4	-	2
PC8. identify the sequence of operations which enables the selection and prioritization of the datums	5	3	-	2
PC9. read and interpret information from Tolerance Zone boundaries for part features in terms of shape and size	6	4	-	2
Modification and storage of drawing	6	4	-	2
PC10. observe any modification, changes required in the drawing and communicate the same to the concerned team in the organization	3	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. store the drawings in an easily accessible place, avoiding damage from moisture, chemicals and fire	3	2	-	1
NOS Total	**50**	**30**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9805
NOS Name	Interpret engineering drawing
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	25/11/2021
Next Review Date	25/11/2026
NSQC Clearance Date	25/11/2021

ASC/N3117: Plan and deliver competency based, instructor-led training sessions for welding operations as per session plan

Description

This NOS is about planning before starting a training program and delivering the competency based, instructor led sessions as per session plan

Scope

The scope covers the following :

- Identify training delivery requirements
- Organise training environment
- Interpret learning environment and delivery requirements
- Perform post-training activities

Elements and Performance Criteria

Identify training delivery requirements

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

PC1. access, read, and interpret the training documentation such as Trainers guide, Occupational standards to be achieved, Curriculum and Training schedule to determine delivery requirements

PC2. obtain details of the learners from authorised sources

PC3. use available information and documentation to identify group and individual learner needs, and relevant learner characteristics

PC4. identify training environment requirements like venue, tools, equipment, materials, space, layout and seating arrangements, stationery, etc.

PC5. arrange and set up the training tools, equipment and material required during the training sessions

PC6. identify constraints impacting training delivery and relevant risks

Organise training environment

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

PC7. modify existing session plans as per the learner needs, time and environment constraints, availability of materials, etc., if required in prescribed and/or standard templates

PC8. ensure availability of adequate training materials, facility, technology, tools and equipment in time for delivery of learning sessions

PC9. ensure training area is risk free and equipped with necessary health and safety resources like fire extinguishers, safety signage, clean toilets, dry flooring, security arrangements, etc.

Interpret learning environment and delivery requirements

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

PC10. conduct training according to the session plan and adjust the delivery method, if required to meet the learner needs

PC11. initiate the session with icebreaker activity and explain the objectives of the training and how it is beneficial for the trainees

PC12. deliver training using a range of training methods and training processes as instructed in trainers guide

PC13. apply basic facilitation techniques and learning principles according to the individual and group learning needs and to ensure effective participation of trainees

PC14. create and maintain a positive learning environment

PC15. manage inappropriate behaviour of trainees professionally as per established organisational policy

Perform post-training activities

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

PC16. monitor and document the learner progress to ensure outcomes are being achieved and individual learner needs are being met

PC17. share feedback with the learners on regular basis to keep them updated on their progress and areas that require more focus

PC18. evaluate the learner progress and make adjustments in the delivery sessions as per the learner specific needs and circumstances

PC19. maintain and store learner records according to organisational requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisations training and assessment system policies and procedures such as candidate selection, rationale and purpose of competency-based assessment, costs/ resourcing

KU2. organizational record-management systems and reporting requirements

KU3. work area inspection procedures and practices

KU4. procedures for the recording, reporting and maintenance of workplace equipment

KU5. training documentation to determine acceptable standards of knowledge and performance required from the learners

KU6. various training methods such as lecture, group discussion & presentation, group activities, role-plays, demonstration and practice, field trips, case studies, self-study

KU7. training processes such as connecting to previous learning, delivering information in a step by step fashion, explanation with examples, two-way interaction, step by step demonstration, guided learner practice and recap/consolidation to optimise learner experiences

KU8. basic facilitation techniques such as active listening, questioning, brainstorming, setting ground rules, encouraging participation, not criticizing, use existing knowledge in the group effectively

KU9. the requirements of the learning program and/ or delivery plan, and the content purpose

KU10. how to set up training facilities, training equipment and tools

KU11. competency based curriculum documents and learning materials

KU12. specific resources, equipment and support services available for learners with special needs

KU13. how to create and modify session plan

KU14. prescribed and standard session plan template

KU15. various ways to handle inappropriate behavior in a professional manner

KU16. importance of monitoring and documenting learning progress of the learners and providing them feedback

Generic Skills (GS)

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

GS1. read presentation slides, handouts, trainers guides and participant handbook etc.
GS2. make minor corrections/updates on presentation slides, handouts, etc.
GS3. write emails to interact with other departments and learners
GS4. listen and understand learners and their queries
GS5. provide clear instructions to learners during the course of the training to conduct training activities
GS6. use collaborative methods to handle conflict without losing calm
GS7. handle disruptions during training in a solution seeking and calm manner
GS8. identify which learner and learning environment related concerns are to be dealt on their own and which must be reported and handled in consultation with seniors
GS9. deliver training program smoothly, on time while meeting the session objectives
GS10. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently
GS11. explore the new approach of doing things to resolve issues
GS12. suggest improvements (if any) in current ways of training

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify training delivery requirements	8	16	-	8
PC1. access, read, and interpret the training documentation such as Trainers guide, Occupational standards to be achieved, Curriculum and Training schedule to determine delivery requirements	2	2	-	2
PC2. obtain details of the learners from authorised sources	1	3	-	1
PC3. use available information and documentation to identify group and individual learner needs, and relevant learner characteristics	1	3	-	1
PC4. identify training environment requirements like venue, tools, equipment, materials, space, layout and seating arrangements, stationery, etc.	1	3	-	1
PC5. arrange and set up the training tools, equipment and material required during the training sessions	2	3	-	2
PC6. identify constraints impacting training delivery and relevant risks	1	2	-	1
Organise training environment	6	7	-	2
PC7. modify existing session plans as per the learner needs, time and environment constraints, availability of materials, etc., if required in prescribed and/or standard templates	2	3	-	1
PC8. ensure availability of adequate training materials, facility, technology, tools and equipment in time for delivery of learning sessions	2	2	-	-
PC9. ensure training area is risk free and equipped with necessary health and safety resources like fire extinguishers, safety signage, clean toilets, dry flooring, security arrangements, etc.	2	2	-	1
Interpret learning environment and delivery requirements	10	15	-	6

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. conduct training according to the session plan and adjust the delivery method, if required to meet the learner needs	1	3	-	1
PC11. initiate the session with icebreaker activity and explain the objectives of the training and how it is beneficial for the trainees	2	2	-	1
PC12. deliver training using a range of training methods and training processes as instructed in trainers guide	2	3	-	1
PC13. apply basic facilitation techniques and learning principles according to the individual and group learning needs and to ensure effective participation of trainees	2	2	-	1
PC14. create and maintain a positive learning environment	2	3	-	1
PC15. manage inappropriate behaviour of trainees professionally as per established organisational policy	1	2	-	1
Perform post-training activities	**6**	**12**	**-**	**4**
PC16. monitor and document the learner progress to ensure outcomes are being achieved and individual learner needs are being met	2	3	-	2
PC17. share feedback with the learners on regular basis to keep them updated on their progress and areas that require more focus	1	3	-	1
PC18. evaluate the learner progress and make adjustments in the delivery sessions as per the learner specific needs and circumstances	2	3	-	-
PC19. maintain and store learner records according to organisational requirements	1	3	-	1
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3117
NOS Name	Plan and deliver competency based, instructor-led training sessions for welding operations as per session plan
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Metal Joining
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	25/11/2021
Next Review Date	25/11/2026
NSQC Clearance Date	25/11/2021

ASC/N3118: Evaluation and assessment of welders

Description

This NOS is about conducting the assessment and evaluate the competence of learner as per required standards.

Scope

The scope covers the following :

- Evaluate performance of trainees
- Prepare for conducting assessment
- Conduct assessment of competence
- Recording and documentation

Elements and Performance Criteria

Evaluate performance of trainees

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

PC1. identify performance indicators for conducting the assessment of trainees

PC2. observe the learner performance and evaluate it against the performance criteria to be achieved

PC3. record and share feedback on learner performance with management as well as the learner to support learning

Prepare for conducting assessment

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

PC4. schedule the assessments in between the training schedule as prescribed in the training plan

PC5. interpret and assess the units of competency which are to be used as benchmarks for assessment and identify the assessment tools required for collecting the assessment evidence

PC6. ensure availability of necessary and adequate tools, equipment and materials for conducting the assessment as per no. of candidates

PC7. explain the purpose of formative assessment and what will be assessed to the learners before conducting the assessment

Conduct assessment of competence

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

PC8. use assessment tools and technology during assessment for various purposes such as evaluation level of competence and learning retention; monitoring of learner progress against program and session objectives; identification of learning needs against required curriculum; providing feedback to learners on progress; creation of development plan for further learning etc.

PC9. gather evidence of performance by applying the principles of assessment and rules of evidence

PC10. evaluate the collected evidence and check that it is reflecting the required competency or not

PC11. use judgement to infer whether competence has been demonstrated or not, on the basis of available evidence and assessment procedures followed

PC12. record assessment decision whether competency mentioned in assessment criteria has been achieved or not

PC13. identify learning gaps and level of competency achieved as per assessment criteria

PC14. provide clear and constructive feedback to the candidate on the basis of assessment decision

PC15. prepare development plan for the learner to cover the learning gaps as identified in the assessment

Recording and documentation

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

PC16. complete learner assessment records accurately and submit for further process within the prescribed timeframes and as per organisational guidelines

PC17. document the results on paper or online forms in prescribed templates as per organisational guidelines

PC18. secure, label and pack the evidence accurately as per standard procedures prescribed by the training organisation

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation's training and assessment system policies and procedures such as candidate selection, rationale and purpose of competency-based assessment, costs/ resourcing

KU2. organizational record-management systems and reporting requirements

KU3. types of assessment

KU4. purpose of formative assessment and when it is undertaken

KU5. how competency based assessment differs from other types of assessment

KU6. the principles of assessment and how they are applied

KU7. the distinction between assessment tools and assessment instruments

KU8. the rules of evidence and how they are applied

KU9. the range of assessment purposes and assessment contexts

KU10. different assessment methods, including suitability for gathering various types of evidence, suitability for the content of units, and resource requirements and associated costs

KU11. how to apply assessment tools (in a formative assessment context)

KU12. types and forms of evidence, including assessment instruments that are relevant to gathering different types of evidence used in competency-based assessment

KU13. assessment tools such as video evidence of skills/performance, recording of oral evidence, computer-based/on-line testing, etc.

Generic Skills (GS)

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

GS1. read presentation slides, handouts, trainers guides and participant handbook etc.

GS2. make minor corrections/updates on presentation slides, handouts, etc.

GS3. write emails to interact with other departments and learners

GS4. provide clear instructions to learners during the course of the trainings to conduct training activities

GS5. use collaborative methods to handle conflict without losing calm

GS6. handle disruptions during trainings in a solution seeking and calm manner

GS7. identify which learner and learning environment related concerns are to be dealt on their own and which must be reported and handled in consultation with seniors

GS8. deliver training program smoothly, on time while meeting the session objectives

GS9. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS10. explore new approach of doing things to resolve issues

GS11. suggest improvements (if any) in current ways of training

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Evaluate performance of trainees	4	9	-	4
PC1. identify performance indicators for conducting the assessment of trainees	2	3	-	2
PC2. observe the learner performance and evaluate it against the performance criteria to be achieved	1	3	-	1
PC3. record and share feedback on learner performance with management as well as the learner to support learning	1	3	-	1
Prepare for conducting assessment	5	10	-	4
PC4. schedule the assessments in between the training schedule as prescribed in the training plan	-	3	-	1
PC5. interpret and assess the units of competency which are to be used as benchmarks for assessment and identify the assessment tools required for collecting the assessment evidence	1	3	-	1
PC6. ensure availability of necessary and adequate tools, equipment and materials for conducting the assessment as per no. of candidates	2	2	-	1
PC7. explain the purpose of formative assessment and what will be assessed to the learners before conducting the assessment	2	2	-	1
Conduct assessment of competence	16	22	-	9
PC8. use assessment tools and technology during assessment for various purposes such as evaluation level of competence and learning retention; monitoring of learner progress against program and session objectives; identification of learning needs against required curriculum; providing feedback to learners on progress; creation of development plan for further learning etc.	2	4	-	1
PC9. gather evidence of performance by applying the principles of assessment and rules of evidence	2	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. evaluate the collected evidence and check that it is reflecting the required competency or not	1	2	-	1
PC11. use judgement to infer whether competence has been demonstrated or not, on the basis of available evidence and assessment procedures followed	2	2	-	2
PC12. record assessment decision whether competency mentioned in assessment criteria has been achieved or not	2	2	-	1
PC13. identify learning gaps and level of competency achieved as per assessment criteria	2	3	-	1
PC14. provide clear and constructive feedback to the candidate on the basis of assessment decision	2	3	-	1
PC15. prepare development plan for the learner to cover the learning gaps as identified in the assessment	3	3	-	1
Recording and documentation	**5**	**9**	**-**	**3**
PC16. complete learner assessment records accurately and submit for further process within the prescribed timeframes and as per organisational guidelines	1	2	-	1
PC17. document the results on paper or online forms in prescribed templates as per organisational guidelines	2	3	-	1
PC18. secure, label and pack the evidence accurately as per standard procedures prescribed by the training organization	2	4	-	1
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3118
NOS Name	Evaluation and assessment of welders
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Metal Joining
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	25/11/2021
Next Review Date	25/11/2026
NSQC Clearance Date	25/11/2021

ASC/N3119: Conduct technical training of welding team

Description

This NOS is about conducting training of the welding team on pre-welding, welding and post-welding activities

Scope

The scope covers the following :

- Conduct training of team on welding preparatory activities
- Conduct training of team on welding activities
- Conduct training of team on post-welding activities
- Perform post-training activities

Elements and Performance Criteria

Conduct training of team on welding preparatory activities

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

PC1. brief the learners about workplace health and safety requirements and the consequences of not adhering to the same

PC2. explain learners about how to read and interpret welding drawing, Welding Procedure Specification (WPS), job orders, SOPs, manual to get information about type of welding need to perform, tools, equipment and input material required and output product specifications and requirements

PC3. explain and demonstrate each step of checking of the tools, equipment and input material for defects and required quality standards

PC4. clarify all technical aspects and performance parameters of the different types of welding

PC5. show learners how to select and prepare raw material and electrodes as per the selected welding method

PC6. demonstrate each step of setting the welding machine and its parameters as per the selected welding method

PC7. demonstrate each step of installing the work pieces and fixture on the apparatus and aligning them with the electrodes as per the job requirements

PC8. ensure that all learners can see the demonstration and hear the instructions and explanations clearly

PC9. provide opportunity to each learner for practicing each step in the task or procedure required to be learned immediately after the demonstration

PC10. guide participant to demonstrate the welding work preparatory activities during the sessions

Conduct training of team on welding activities

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

PC11. explain the various welding methods, their process flow and do's/don'ts of the manufacturing process

PC12. conduct training sessions on various welding methods i.e. spot, seam, MIG, TIG and robotic welding for producing the components as per the drawing, SOP and WI

PC13. demonstrate correct angle of holding torch and filler wire, the direction of weld and feed and travel speed during the welding operation

PC14. demonstrate each step of producing joints of the specified dimensional accuracy and required weld quality

PC15. explain and demonstrate each step of measuring the welded component and comparing it with the dimensions and specifications prescribed in the WPS and engineering drawing

PC16. demonstrate how to observe the malfunctions/defects in the machine during operations and monitor the process parameters by reading gauges

PC17. provide opportunity and guide each participant to demonstrate the welding process as per the selected welding method and producing components as per the dimensions and specifications given in the WPS and drawing

Conduct training of team on post-welding activities

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

PC18. conduct training session on post welding activities such as quality inspection of welded components, segregation and storage of final components, machine maintenance and preparation of records and documents as per organisational guidelines

PC19. elaborate various welding defects and their impact on the welded component

PC20. explain and demonstrate each step of quality check tests and repairing of defects from the components

PC21. demonstrate the procedure of segregating, tagging and storing the final components followed in an organisation

PC22. explain and demonstrate each step of tools and machine maintenance activities after completion of work

PC23. describe various documents and records related to welding work, maintenance work etc. need to update and maintain after completion of work

Perform post-training activities

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

PC24. address the queries and doubts of the participants

PC25. provide appropriate feedback to the participants

PC26. store and maintain relevant records related to training

PC27. monitor the cleanliness and tidiness of the workshop area

PC28. secure equipment and tools in safe places in accordance with procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the basic principle of welding process

KU2. various types of welding such as SMAW, MIG, MAG, TIG, Resistance Welding (Seam Welding, Projection Welding), Robotic Welding etc. and their process flow

KU3. various types of welding joints

KU4. how to read and interpret welding drawings and symbols

KU5. SOP recommended by the manufacturer for using tools, measuring instruments, accessories etc. during the welding processes

KU6. ISO colour codes for welding apparatus such as gas cylinder, hoses, electric cables, etc. different cleaning methods for electrodes, metal surfaces etc.

KU7. different cleaning methods for electrodes, metal surfaces etc.

KU8. impact of various welding parameters like voltage, current, gas flow rate, speed, pressure, torch angle, cycle time, electrode distance etc. on the quality and quantity of welding

KU9. SOP recommended by the organisation for operating welding machine and its accessories

KU10. SOP recommended by the organisation for checking irregularities in the product/work piece

KU11. safety requirements during the welding work

KU12. the post welding processes like inspection, cleaning, maintenance etc.

KU13. various types of weld defects such as spatter, blow-hole, burn through, etc. and their remedies

KU14. various testing techniques like visual, destructive and non-destructive

KU15. methods of storage and tagging of final product

KU16. various training documents and records need to prepare and maintain

Generic Skills (GS)

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

GS1. read presentation slides, handouts, trainers guides and participant handbook etc.

GS2. make minor corrections/updates on presentation slides, handouts, etc.

GS3. write emails to interact with other departments and learners

GS4. listen and understand learners and their queries

GS5. provide clear instructions to learners during the course of the trainings to conduct training activities

GS6. use collaborative methods to handle conflict without losing calm

GS7. handle disruptions during trainings in a solution seeking and calm manner

GS8. identify which learner and learning environment related concerns are to be dealt on their own and which must be reported and handled in consultation with seniors

GS9. deliver training program smoothly, on time while meeting the session objectives

GS10. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS11. explore new approach of doing things to resolve issues

GS12. suggest improvements (if any) in current ways of training

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Conduct training of team on welding preparatory activities	11	22	-	9
PC1. brief the learners about workplace health and safety requirements and the consequences of not adhering to the same	2	-	-	1
PC2. explain learners about how to read and interpret welding drawing, Welding Procedure Specification (WPS), job orders, SOPs, manual to get information about type of welding need to perform, tools, equipment and input material required and output product specifications and requirements	1	3	-	1
PC3. explain and demonstrate each step of checking of the tools, equipment and input material for defects and required quality standards	2	1	-	1
PC4. clarify all technical aspects and performance parameters of the different types of welding	-	2	-	1
PC5. show learners how to select and prepare raw material and electrodes as per the selected welding method	1	2	-	1
PC6. demonstrate each step of setting the welding machine and its parameters as per the selected welding method	1	3	-	1
PC7. demonstrate each step of installing the work pieces and fixture on the apparatus and aligning them with the electrodes as per the job requirements	1	2	-	-
PC8. ensure that all learners can see the demonstration and hear the instructions and explanations clearly	1	3	-	1
PC9. provide opportunity to each learner for practicing each step in the task or procedure required to be learned immediately after the demonstration	1	3	-	1
PC10. guide participant to demonstrate the welding work preparatory activities during the sessions	1	3	-	1
Conduct training of team on welding activities	9	13	-	6

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. explain the various welding methods, their process flow and do's/don'ts of the manufacturing process	1	2	-	1
PC12. conduct training sessions on various welding methods i.e. spot, seam, MIG, TIG and robotic welding for producing the components as per the drawing, SOP and WI	1	2	-	1
PC13. demonstrate correct angle of holding torch and filler wire, the direction of weld and feed and travel speed during the welding operation	1	1	-	-
PC14. demonstrate each step of producing joints of the specified dimensional accuracy and required weld quality	1	2	-	1
PC15. explain and demonstrate each step of measuring the welded component and comparing it with the dimensions and specifications prescribed in the WPS and engineering drawing	1	2	-	1
PC16. demonstrate how to observe the malfunctions/defects in the machine during operations and monitor the process parameters by reading gauges	2	2	-	1
PC17. provide opportunity and guide each participant to demonstrate the welding process as per the selected welding method and producing components as per the dimensions and specifications given in the WPS and drawing	2	2	-	1
Conduct training of team on post-welding activities	**6**	**11**	**-**	**4**
PC18. conduct training session on post welding activities such as quality inspection of welded components, segregation and storage of final components, machine maintenance and preparation of records and documents as per organisational guidelines	1	2	-	1
PC19. elaborate various welding defects and their impact on the welded component	1	2	-	1
PC20. explain and demonstrate each step of quality check tests and repairing of defects from the components	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC21. demonstrate the procedure of segregating, tagging and storing the final components followed in an organisation	1	2	-	-
PC22. explain and demonstrate each step of tools and machine maintenance activities after completion of work	1	2	-	-
PC23. describe various documents and records related to welding work, maintenance work etc. need to update and maintain after completion of work	1	1	-	1
Perform post-training activities	4	4	-	1
PC24. address the queries and doubts of the participants	1	1	-	1
PC25. provide appropriate feedback to the participants	1	-	-	-
PC26. store and maintain relevant records related to training	-	1	-	-
PC27. monitor the cleanliness and tidiness of the workshop area	1	1	-	-
PC28. secure equipment and tools in safe places in accordance with procedures	1	1	-	-
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3119
NOS Name	Conduct technical training of welding team
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Metal Joining
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	25/11/2021
Next Review Date	25/11/2026
NSQC Clearance Date	25/11/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. 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 successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N9810.Manage work and resources (Manufacturing)	50	30	-	20	100	10
ASC/N9812.Interact effectively with team, customers and others	50	30	-	20	100	10
ASC/N9805.Interpret engineering drawing	50	30	-	20	100	5
ASC/N3117.Plan and deliver competency based, instructor-led training sessions for welding operations as per session plan	30	50	-	20	100	25
ASC/N3118.Evaluation and assessment of welders	30	50	-	20	100	25
ASC/N3119.Conduct technical training of welding team	30	50	-	20	100	25
Total	**240**	**240**	**-**	**120**	**600**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
SOP	Standard Operating Procedure
GD&T	Geometric Dimensioning & Tolerancing
CAD	Computer-Aided Drafting
CAM	Computer-Aided Manufacturing

Glossary

Sector	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.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	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.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	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.
Knowledge and Understanding (KU)	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.

Organisational Context	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.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	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.
Electives	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.
Options	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.