



Automotive Machining Trainer

QP Code: ASC/Q3511

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/Q3511: Automotive Machining Trainer.....	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
ASC/N9810: Manage work and resources (Manufacturing).....	5
ASC/N9812: Interact effectively with team, customers and others	11
ASC/N9805: Interpret engineering drawing	16
ASC/N3541: Plan and deliver competency based, instructor-led training sessions as per session plan	21
ASC/N3542: Evaluation and assessment of trainees	27
ASC/N3543: Conduct technical training of machining team.....	33
Assessment Guidelines and Weightage.....	39
<i>Assessment Guidelines</i>	39
<i>Assessment Weightage</i>	40
Acronyms	41
Glossary	42

ASC/Q3511: Automotive Machining Trainer

Brief Job Description

The individual is using pre-set lesson plans and training materials to plan and conduct training sessions for the machining 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/N3541: Plan and deliver competency based, instructor-led training sessions as per session plan](#)
5. [ASC/N3542: Evaluation and assessment of trainees](#)
6. [ASC/N3543: Conduct technical training of machining team](#)

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Machining Operation
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7223.0501

Minimum Educational Qualification & Experience	<p>I.T.I (Machinist/Turner) with 2 Years of relevant experience</p> <p>OR</p> <p>Diploma (Mechanical/Automobile) with 1 Years of relevant experience from recognized regulatory body</p> <p>OR</p> <p>Certificate-NSQF (Automotive CNC Machining Technician/ Automotive Conventional Machining Technician Level 4) with 3 Years of relevant experience</p>
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	30/09/2021
Next Review Date	30/09/2024
NSQC Approval Date	30/09/2021
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
<i>Maintain safe and secure working environment</i>	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
<i>Maintain Health and Hygiene</i>	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
<i>Effective waste management practices</i>	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
<i>Material/energy conservation practices</i>	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	24/06/2021
Next Review Date	24/06/2026
Deactivation Date	24/06/2026
NSQC Clearance Date	24/06/2021

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
<i>Communicate effectively with team members</i>	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
<i>Interact with superiors</i>	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
<i>Respect gender and ability differences</i>	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	24/06/2021
Next Review Date	24/06/2026
Deactivation Date	24/06/2026
NSQC Clearance Date	24/06/2021

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 Tolerancing (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
<i>Interpret information from various views, projection, 2D and 3D shapes</i>	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
<i>Identify drawing standards and symbols</i>	23	15	-	8
PC6. interpret Geometric Dimensioning and Tolerancing (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
<i>Modification and storage of drawing</i>	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	4
Credits	TBD
Version	1.0
Last Reviewed Date	18/08/2020
Next Review Date	24/06/2026
Deactivation Date	24/06/2026
NSQC Clearance Date	24/06/2021

ASC/N3541: Plan and deliver competency based, instructor-led training sessions 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
<i>Identify training delivery requirements</i>	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
<i>Organise training environment</i>	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
<i>Interpret learning environment and delivery requirements</i>	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
<i>Perform post-training activities</i>	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/N3541
NOS Name	Plan and deliver competency based, instructor-led training sessions as per session plan
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Machining Operation
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	30/09/2021
Next Review Date	30/09/2024
Deactivation Date	30/09/2024
NSQC Clearance Date	30/09/2021

ASC/N3542: Evaluation and assessment of trainees

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
<i>Evaluate performance of trainees</i>	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
<i>Prepare for conducting assessment</i>	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
<i>Conduct assessment of competence</i>	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
<i>Recording and documentation</i>	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 organisation	2	4	-	1
NOS Total	30	50	-	20

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3542
NOS Name	Evaluation and assessment of trainees
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Machining Operation
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	30/09/2021
Next Review Date	30/09/2024
Deactivation Date	30/09/2024
NSQC Clearance Date	30/09/2021

ASC/N3543: Conduct technical training of machining team

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Conduct training of team on machining 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 to learners how to read and interpret machine drawings, SOPs, manual to get information about machining operations need to perform, tooling instructions, 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 CNC machine
- PC5. show learners how to select and modify the CNC program as per the product specification and requirements
- PC6. demonstrate each step of setting the CNC machine and machine parameters on the control panel
- PC7. demonstrate each step of mounting, installation and alignment of tools, attachments and fixtures on machine by using hand tools and precision measuring instruments
- 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 machining work preparatory activities during the sessions

Conduct training of team on machining activities

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

- PC11. conduct training sessions on various machining operations for producing the components as per the drawing, SOP and WI
- PC12. explain the various machining operations, machining process flow and do's/don'ts of the manufacturing process

- PC13. explain and demonstrate each step of measuring the machined component and comparing it with the dimensions and specifications prescribed in the work order and engineering drawing
- PC14. demonstrate how to observe the malfunctions/defects in the machine during operations and monitor the process parameters by reading gauges
- PC15. provide opportunity and guide each participant to demonstrate the machining operations and producing components as per the dimensions and specifications are given in the machine drawing

Conduct training of team on post-machining activities

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

- PC16. conduct training sessions on post machining activities such as quality inspection of machined components, segregation and storage of final components, machine
- PC17. elaborate various defects and their impact on the machined component
- PC18. explain and demonstrate each step of quality check tests and repairing of defects from the components
- PC19. demonstrate the procedure of segregating, tagging and storing the final components followed in an organisation
- PC20. explain and demonstrate each step of tools and machine maintenance activities after completion of work
- PC21. describe various documents and records related to machining 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:

- PC22. address the queries and doubts of the participants
- PC23. provide appropriate feedback to the participants
- PC24. store and maintain relevant records related to training
- PC25. monitor the cleanliness and tidiness of the workshop area
- PC26. 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. fundamentals of the CNC/conventional machine
- KU2. various types of machining processes such as drilling, boring, turning etc.
- KU3. SOP recommended by the manufacturer for using tools, jigs, fixtures, measuring instruments etc., during the machining processes
- KU4. how to select and modify the CNC machining program
- KU5. SOP recommended by the organisation for operating CNC and conventional machine
- KU6. the impact of various machining parameters on the final product
- KU7. the use of various cutting tools for different machining operations
- KU8. how to check the first component produced for required specifications
- KU9. SOP recommended by the organisation for checking defects in the product/workpiece
- KU10. safety requirements for CNC and conventional machines during the machining work
- KU11. about the various inspection methods for inspecting the quality of machined product

KU12. 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 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 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
<i>Conduct training of team on machining preparatory activities</i>	12	24	-	9
PC1. brief the learners about workplace health and safety requirements and the consequences of not adhering to the same	2	-	-	1
PC2. explain to learners how to read and interpret machine drawings, SOPs, manual to get information about machining operations need to perform, tooling instructions, 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 CNC machine	-	3	-	1
PC5. show learners how to select and modify the CNC program as per the product specification and requirements	1	3	-	1
PC6. demonstrate each step of setting the CNC machine and machine parameters on the control panel	1	3	-	1
PC7. demonstrate each step of mounting, installation and alignment of tools, attachments and fixtures on machine by using hand tools and precision measuring instruments	2	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 machining work preparatory activities during the sessions	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Conduct training of team on machining activities</i>	7	10	-	5
PC11. conduct training sessions on various machining operations for producing the components as per the drawing, SOP and WI	1	2	-	1
PC12. explain the various machining operations, machining process flow and do's/don'ts of the manufacturing process	1	2	-	1
PC13. explain and demonstrate each step of measuring the machined component and comparing it with the dimensions and specifications prescribed in the work order and engineering drawing	1	2	-	1
PC14. demonstrate how to observe the malfunctions/defects in the machine during operations and monitor the process parameters by reading gauges	2	2	-	1
PC15. provide opportunity and guide each participant to demonstrate the machining operations and producing components as per the dimensions and specifications are given in the machine drawing	2	2	-	1
<i>Conduct training of team on post-machining activities</i>	7	12	-	5
PC16. conduct training sessions on post machining activities such as quality inspection of machined components, segregation and storage of final components, machine	1	2	-	1
PC17. elaborate various defects and their impact on the machined component	1	2	-	1
PC18. explain and demonstrate each step of quality check tests and repairing of defects from the components	1	2	-	1
PC19. demonstrate the procedure of segregating, tagging and storing the final components followed in an organisation	1	2	-	-
PC20. explain and demonstrate each step of tools and machine maintenance activities after completion of work	2	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC21. describe various documents and records related to machining work, maintenance work etc. need to update and maintain after completion of work	1	1	-	1
<i>Perform post-training activities</i>	4	4	-	1
PC22. address the queries and doubts of the participants	1	1	-	1
PC23. provide appropriate feedback to the participants	1	-	-	-
PC24. store and maintain relevant records related to training	-	1	-	-
PC25. monitor the cleanliness and tidiness of the workshop area	1	1	-	-
PC26. 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/N3543
NOS Name	Conduct technical training of machining team
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Machining Operation
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	30/09/2021
Next Review Date	30/09/2024
Deactivation Date	30/09/2024
NSQC Clearance Date	30/09/2021

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/N3541.Plan and deliver competency based, instructor-led training sessions as per session plan	30	50	-	20	100	25
ASC/N3542.Evaluation and assessment of trainees	30	50	-	20	100	25
ASC/N3543.Conduct technical training of machining 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.