

QUALIFICATION FILE

Aerospace CNC Machinist

☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☒ Apprenticeship

☒ Upskilling ☐ Dual/Flexi Qualification ☒ For ToT ☒ For ToA

☒ General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level:4

Submitted By:

Aerospace And Aviation Sector Skill Council

AASSC, C/o Dynamatic Manufacturing Ltd,

Plot No. V77 & 78, 1st Main Road, 2nd stage

Peenya Industrial Area, Bengaluru- 560058

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Section 1: Basic Details

1.	Qualification Name	Aerospace CNC Machinist														
2.	Sector/s	Manufacturing and Assembly														
3.	Type of Qualification: ☐ New ☒ Revised ☐ Has Electives/Options ☐ OEM	NQR Code & version of existing/previous qualification: (change to previous, once approved)		Qualification Name of existing/previous version: Aerospace CNC Machinist												
4.	a. OEM Name b. Qualification Name (Wherever applicable)	b. Aerospace CNC Machinist														
5.	National Qualification Register (NQR) Code &Version (Will be issued after NSQC approval)	QG-04-AA-04190-2025-V2-AASSC	6. NCrf/NSQF Level: 4													
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other) (Wherever applicable specify multiple entry/exits also & provide details in annexure)	certificate														
8.	Brief Description of the Qualification	An Aerospace CNC Machinist is skilled in operating computer numerical control (CNC) machines to fabricate precise parts for the aerospace industry. This role requires expertise in interpreting blueprints, working with advanced materials, and ensuring parts meet strict safety and quality standards. Proficiency in CAD/CAM software and a deep understanding of aerospace manufacturing processes are essential.														
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1"> <thead> <tr> <th>S. No.</th> <th>Academic/Skill Qualification (with Specialization - if applicable)</th> <th>Required Experience (with Specialization - if applicable)</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>12th Class Pass or Equivalent</td> <td>In Science With Maths and Phycis</td> </tr> <tr> <td>02</td> <td>10th Class Pass</td> <td>3 years relevant experience</td> </tr> <tr> <td>03</td> <td>Pervious NSQF Level 3 in a relevant job role</td> <td>3 years relevant experience</td> </tr> </tbody> </table> b. Age: 18			S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)	01	12th Class Pass or Equivalent	In Science With Maths and Phycis	02	10th Class Pass	3 years relevant experience	03	Pervious NSQF Level 3 in a relevant job role	3 years relevant experience
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)														
01	12th Class Pass or Equivalent	In Science With Maths and Phycis														
02	10th Class Pass	3 years relevant experience														
03	Pervious NSQF Level 3 in a relevant job role	3 years relevant experience														
10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrf))	21	11. Common Cost Norm Category (I/II/III) (wherever applicable): I													

12.	Any Licensing requirements for Undertaking Training on This Qualification (<i>wherever applicable</i>)	Nil																							
13.	Training Duration by Modes of Training Delivery (<i>Specify Total Duration as per selected training delivery modes and as per requirement of the qualification</i>)	☒ Offline ☐ Online ☐ Blended <table border="1"> <thead> <tr> <th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr> </thead> <tbody> <tr> <td>Classroom (offline)</td><td>240:00</td><td>360:00</td><td>30:00</td><td>00:00</td><td>630:00</td></tr> <tr> <td>Online</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <i>(Refer Blended Learning Annexure for details)</i>						Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	OJT Recommended (Hours)	Total (Hours)	Classroom (offline)	240:00	360:00	30:00	00:00	630:00	Online					
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Classroom (offline)	240:00	360:00	30:00	00:00	630:00																				
Online																									
14.	Aligned to NCO/ISCO Code/s (<i>if no code is available mention the same</i>)	NCO-2015/7223.5001																							
15.	Progression path after attaining the qualification (<i>Please show Professional and Academic progression</i>)	Aerospace CNC Machinist, Aerospace Machining Supervisor																							
16.	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Nil																							
17.	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	☒ Yes ☐ No URLs of similar Qualifications:																							
18.	Is the Job Role Amenable to Persons with Disability	☐ Yes ☒ No If "Yes", specify applicable type of Disability:																							
19.	How Participation of Women will be Encouraged	Women are encouraged to become Aerospace CNC Machinists through skill development programs, scholarships, and women-specific hiring initiatives in aerospace companies. Flexible training, safe workplaces, and mentorship programs help them build careers in CNC machining. Government schemes, financial aid, and industry collaborations further support their participation and growth in the sector																							
20.	Are Greening/ Environment Sustainability Aspects Covered (<i>Specify the NOS/Module which covers it</i>)	☐ Yes ☒ No																							
21.	Is Qualification Suitable to be Offered in Schools/Colleges	Schools ☐ Yes ☐ No Colleges ☒ Yes ☐ No																							
22.	Name and Contact Details of Submitting / Awarding Body SPOC (<i>In case of CS or MS, provide details of both Lead AB & Supporting ABs</i>)	Name: Aerospace and Aviation Sector Skill Council Email: touchdown@aassc.in Contact No.: 080-28398506 Website: https://www.aassc.in/																							
23.	Final Approval Date by NSQC: 08-05-2025	24. Validity Duration: 03 Years				25. Next Review Date: 08-05-2028																			

Section 2: Module Summary

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

Th.-Theory **Pr.**-Practical **OJT**-On the Job **Man.**-Mandatory Training **Rec.**-Recommended **Proj.**-Project

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.	understanding of Accuracy of machining of aerospace components	AAS/N1011 NOS Version No. – 1.0	Core	4	4	50:00	60:00	10:00	00:00	120:00	40	60	-	-	100	14
2.	Perform pre- machining activities	AAS/N NOS Version No. – 2.0 1002	Core	4	5	55:00	90:00	05:00	00:00	150:00	48	52	-	-	100	22
3.	Perform machining operations	AAS/N1003 NOS Version No. – 2.0	Core	4	4	40:00	75:00	05:00	00:00	120:00	40	60	-	-	100	22
4.	Perform post machining activities	AAS/N1004 NOS Version No. – 2.0	Core	4	5	55:00	90:00	05:00	00:00	150:00	40	60	-	-	100	22
5.	Maintain 5S at the work premises	ASC/N0021 NOS Version No. – 1.0	Core	4	1	10:00	15:00	05:00	00:00	30:00	25	75	-	-	100	15
6.	Employability Skills	DGT/VSQ/N 0102 NOS Version No. – 1.0	Non-core	4	2	30:00	30:00	00:00	00:00	60:00	20	30	-	-	50	5
Duration (in Hours) / Total Marks					21	240:00	360:00	30:00	00:00	630:00	213	337	-	-	550	100

Elective NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/Non-Core	NCrF/NS QF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.																
2.																
Duration (in Hours) / Total Marks																

Optional NOS/s:

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/Non-Core	NCrF/NS QF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) (if applicable)
1.																
2.																
Duration (in Hours) / Total Marks																

Assessment - Minimum Qualifying Percentage

Please specify **any one** of the following:

Minimum Pass Percentage – Aggregate at qualification level: 60 % (Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)

Section 3: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Graduate in Any Specialization with 2-3 years of Industrial Experience in CNC Machinist.
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	Graduate in Any Specialization with 5-10 years of Industrial Experience in CNC Machinist.
3.	Tools and Equipment Required for Training	☒ Yes ☐ No (If "Yes", details to be provided in Annexure)
4.	In Case of Revised Qualification, Details of Any Upskilling Required for Trainer	Nil

Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Graduate in Any Specialization with 2-3 years of Industrial Experience in CNC Machinist.
2.	Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Diploma in Any Specialization with 2-3 years of Industrial Experience in CNC Machinist.
3.	Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years) <i>(as per NCVET guidelines)</i>	Graduate in Any Specialization with 5-10 years of Industrial Experience in CNC Machinist.
4.	Assessment Mode <i>(Specify the assessment mode)</i>	Blended
5.	Tools and Equipment Required for Assessment	☒ Same as for training ☐ Yes ☐ No <i>(details to be provided in Annexure-if it is different for Assessment)</i>

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	Latest Skill Gap Study (not older than 2 years) (Yes/No): No
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): yes
3.	Government /Industry initiatives/ requirement (Yes/No): yes
4.	Number of Industry validation provided: 10
5.	Estimated nos. of persons to be trained and employed: 2200
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments: yes

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	Annexure: NCrf/NSQF level justification based on NCrf level/NSQF descriptors <i>(Mandatory)</i>	Attached
2.	Annexure: List of tools and equipment relevant for qualification <i>(Mandatory, except in case of online course)</i>	Attached
3.	Annexure: Detailed Assessment Criteria <i>(Mandatory)</i>	Attached
4.	Annexure: Assessment Strategy <i>(Mandatory)</i>	

5.	Annexure: Blended Learning (Mandatory, in case selected Mode of delivery is "Blended Learning")	
6.	Annexure: Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry-Exit)	
7.	Annexure: Acronym and Glossary (Optional)	Attached
8.	Supporting Document: Model Curriculum (Mandatory – Public view)	Attached
9.	Supporting Document: Career Progression (Mandatory - Public view)	Attached
10.	Supporting Document: Occupational Map (Mandatory)	Attached
11.	Supporting Document: Assessment SOP (Mandatory)	Attached
12.	Any other document you wish to submit:	

Annexure: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	The Aerospace CNC machinist role primarily involves CNC machining of aerospace components/ structures in all pre-machining & post machining stages along with self-inspection & gauging.	The jobholder is responsible for carrying out activities such as This role primarily involves CNC machining of aerospace components/ structures in all pre-machining & post machining stages along with self-inspection & gauging. This involves working in some familiar, predictable and routine situations. He will be responsible for carrying out a range of jobs where some of them will require them to make choices about the approaches that must be adopted. Hence, it qualifies as a Level 4 Role. For ex: obtain drawings, route card / work instruction / CNC process sheet / CNC set-up sheet, details of fixtures (if any) from shop supervisor, check right Computer Numerically Controlled (CNC) programme and right tools required for machining of aerospace components, draw the raw-material as per specification check for	4

		satisfactory functioning and calibration of the machine, plan the machining process as per process sheet or route card etc., However, the job holder does not perform problem solving or supervisory role. Therefore, it does not qualify for Level 5 role. At the same time, the job holder is not required to work in a limited to range of jobs under close supervision. He is also not a 'partly skilled' worker, the job role cannot be pegged at level 3. for ex: arrange appropriate jigs and fixtures as mentioned in the manufacturing drawings / route card / setup sheet / process sheet manuals/organization maintenance manuals, establish machine datum reference after following proper procedures as per CNC set up sheet etc as mentioned in the adjacent cell. Hence the NSQF level should be 4.	
Professional and Technical Skills/ Expertise/ Professional Knowledge	The user/individual on the job needs to know and understand how to: comprehend the organisation's safety and security policies and procedures, comprehend the regulatory guidelines on safe conduct of operations and maintenance of conditions to thwart any acts of unlawful interference, report any identified breaches of safety, and security policies and procedures to the designated person, coordinate with other resources at the workplace (within and outside the organisation) to achieve safe and secure environment, identify and mitigate any safety and security hazards like illness, accidents, fires or acts of unlawful	The job holder is expected to have factual knowledge of the field of Aerospace CNC machining. For Ex: Knowledge about different types of CNC machines, Different types of manuals containing work related information, Relevant Standards & procedures followed in the organisation, 5S & safety norms practiced in the organisation etc., Since all the abovementioned areas are commensurate to the level 4 professional knowledge, the role qualifies for Level 4. As the job holder requires professional knowledge higher than basic facts, processes in the field etc., therefore it cannot be pegged at level 3. For example: check output requirements/ limits of machining e.g. surface finish, specific orientation, gauge inspection etc., understand any other specific requirement for machining from process sheet/ route card or work instruction and grain	4

	interference if it falls within the limits of individual's authority, report any hazards outside the individual's authority to the relevant person in line with organisational procedures and regulatory guidelines, Understand the various materials and the methodology of Machining them on CNC machines, trial running the CNC programmes etc	direction, if any. etc., Therefore it cannot be pegged at level 3 and ideally fit as a level 4 Job Role	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	The user/individual on the job needs to know and understand how to: make decisions on a suitable course of action or response if permitted by the authority matrix, monitor efficient functioning of all activities, plan and organize work to achieve targets and deadlines, communicate with customers and other stakeholders in a courteous manner, maintain cordial work relationship, identify trends/common causes for errors and suggest possible solutions to the supervisor / management, identify and correct errors, analyse best possible solutions (cost, time, effort, etc.) suited for operations, concentrate on task at hand and complete it without errors, apply balanced judgments to different situations etc.,	The job holder is expected to recall and demonstrate practical skill in carrying out routine and repetitive activities in a narrow range of applications, using appropriate rules and tools. For instance, validate all the process/equipment manuals so that the final process selection is correct, effectively discuss and communicate regarding targets, activities, processes etc. With supervisor and co-workers, question supervisor in order to understand the nature of problem etc., As the job does not require recalling and demonstrating practical skill, routine and repetitive in narrow range application. For example: Organise & prioritise the job received from the production manager, support the supervisor in scheduling tasks for timely completion of the job, recognise a workplace problem or a potential problem and take action etc., Here the jobholder has to use appropriate rules and tools to perform his role; this role does not fit at level 3 but at level 4.	4
Broad Learning Outcomes/Core Skill	The individual on the job needs to know and understand how to: complete accurately well written report in English language detailing the situations of emergency with attention to	The job holder is expected to complete accurate, complete accurately well written report in English language detailing the situations of emergency with attention to detail, read instructions/ guidelines/ procedures/rules, listen to and orally	

	detail, read instructions/ guidelines/ procedures/rules, listen to and orally communicate information with all concerned, document the available information, note down observations in the given format, write information documents to concerned departments/teams under guidance of supervisor, enter the information in Inspection record sheets, relevant registers etc., read and interpret engineering drawings, sketches and symbols used, read the organisation/manufacture manuals and process documents, effectively discuss and communicate regarding targets, activities, processes etc with supervisor and co-workers, question supervisor in order to understand the nature of problem	communicate information with all concerned, document the available information, note down observations in the given format, write information documents to concerned departments/teams under guidance of supervisor, read and interpret engineering drawings, sketches and symbols used, read the organization/manufacture manuals and process documents. Hence, this role qualifies for Level 4. As the job holder requires core skills of language, written and oral to communicate with required clarity, read instructions/guidelines and communicate higher than requiring core skills of language, written and oral to communicate with minimum clarity, therefore it cannot be pegged at level 3.	4
Responsibility	The Aerospace CNC machinist is responsible for Compulsory: 1. AAS/N1011: understanding Accuracy of machining of aerospace components 2. AAS/N1002: Perform pre-machining activities 3. AAS/N1003: Perform machining operations 4. AAS/N1004: Perform post machining activities 5. ASC/N0021: Maintain 5S at the work premises 6. DGT/VSQ/N0102: Employability Skills	The job holder is responsible for only own work and learning. S/he is a skilled worker who carries out work activities of Perform pre-machining activities, perform machining operations, perform post machining activities, follow organisation safety and security procedures and Maintain 5S at the work premises and Work effectively in a team. Hence, this role qualifies for Level 4. It does not comprise of any supervisory activities. As this job is about having responsibility for own working and learning and is not working under close supervision within defined limits. Therefore, it cannot be pegged at level 3. For ex: check the drawing issue (in route/ book card) and	4

		ensure that the latest issue/ version is being used, check the calibration certificate of machines before using the same, study the CNC set-up sheet , drawing, route-card of the component to be machined, obtain the relevant cutting tools from the tool crib and verify the same, identify the right raw material of given size, specification and verify the same etc.	
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Annexure: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Black/White Board & Markers		1
2	PC based projection system		1
3	First aid kit		3
4	Basic fire safety aids		1
5	3 Axis CNC Machines		1
6	5 Axis CNC Machines		1
7	Personal protective equipment (PPE) (gloves, goggles, ear plugs)		10
8	Touch probe		1
9	Lever dial		6
10	plunger dial with stand (magnetic)		6
11	Digital Vernier		6
12	Computers aided instructional packages/video films		1
13	Concerned wall charts		1
14	Standard fixtures for the CNC Machines		As required
15	Tool Holder		As required
16	End Mills		As required
17	Collets		As required
18	Machine vice		As required
19	Clamps		As required

20	Studs		As required
21	centering device		As required
22	Lubricants		As required
23	Cutting oils		As required
24	Carbide Tool Holders		As required

Classroom Aids

Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Duster.

Annexure: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile (if available)
1	Hindustan Aeronautics ltd	Mr,suresh M	Addl.General Manager	HAL,Skill Development, Bengaluru	9902132788	m.suresh@hal-india.co.in	

Annexure: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2025	500					
2026	800					
2027	900					

Data to be provided year-wise for the next 3 years

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Qualification Version	Year	Total Candidates				Women				People with Disability			
		Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
	2022	225	208	208									
	2023	52	45	49									
	2024	270	205	217									

Applicable for revised qualifications only, data to be provided year-wise for past 3 years.

List Schemes in which the previous version of Qualification was implemented:

1. RPL
2. Fee based

Content availability for previous versions of qualifications:

☒ Participant Handbook ☒ Facilitator Guide ☐ Digital Content ☒ Qualification Handbook ☐ Any Other:

Languages in which Content is available:

Hindi

Annexure: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET “Guidelines for Blended Learning for Vocational Education, Training & Skilling” available on:

<https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf>

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☐ Theory/ Lectures - Imparting theoretical and conceptual knowledge		
2	☐ Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners		
3	☐ Showing Practical Demonstrations to the learners		
4	☐ Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	☐ Tutorials/ Assignments/ Drill/ Practice		
6	☐ Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	☐ On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		

Annexure: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
AAS/N1011: understanding Accuracy of machining of aerospace components	<i>Interpret Machining Accuracy Requirements</i>	15	20	-	-
	PC1. Understand the importance of machining accuracy in aerospace components and its effect on airworthiness and system performance	4	5	-	-
	PC2. Interpret engineering drawings, GD&T (Geometric Dimensioning & Tolerancing), and process plans to determine accuracy requirements	4	5	-	-
	PC3. Identify dimensional tolerances and surface finish specifications for aerospace parts.	4	5	-	-
	PC4. Understand the impact of incorrect settings, tool wear, and fixture alignment on final dimensions.	3	5	-	-
	<i>Apply Accuracy Control Techniques in CNC Machining</i>	15	20	-	-
	PC5. Set up and operate CNC machines as per specifications ensuring control over machining accuracy.	4	5	-	-
	PC6. Monitor machining parameters (feed, speed, depth of cut) that influence part tolerance.	4	5	-	-
	PC7. Check for thermal distortion, vibration, and tool deflection during machining	4	5	-	-
	PC8. Take corrective actions in case of dimensional deviations or tool-related issues.	3	5	-	-
	<i>Performing Accurate Measurement and Inspection</i>	10	20	-	-
	PC9. Select appropriate measurement instruments such as micrometers, height gauges, bore gauges, and CMMs	3	5	-	-
	PC10. Calibrate measurement instruments before use.	3	5	-	-
	PC11. Measure finished parts against tolerance limits and record results accurately	2	5	-	-
	PC12. Report any non-conformities to supervisors or the quality control team.	2	5	-	-
	NOS Total	40	60	-	-

AAS/N1002: Perform pre-machining activities	<i>Collect manufacturing drawing and process requirements</i>	16	20		
	PC1. obtain drawings, route card / work instruction / CNC process sheet / CNC set-up sheet, details of fixtures (if any) from shop supervisor	3	4	-	-
	PC2. check right Computer Numerically Controlled (CNC) programme and right tools required for machining of aerospace components	3	4	-	-
	PC3. draw the raw-material as per specification	3	4	-	-
	PC4. check for satisfactory functioning and calibration of the machine	3	4	-	-
	PC5. plan the machining process as per process sheet or route card	4	4	-	-
	<i>Prepare tools, arrange jigs and fixture</i>	20	20		
	PC6. arrange the required tool from stores	4	4	-	-
	PC7. arrange appropriate jigs and fixtures as mentioned in the manufacturing drawings / route card / setup sheet / process sheet	4	4	-	-
	PC8. establish machine datum reference after following proper procedures as per CNC set up sheet	4	4	-	-
	PC9. check output requirements/ limits of machining e.g. surface finish, specific orientation, gauge inspection etc.	4	4	-	-
	PC10. understand any other specific requirement for machining from process sheet/ route card or work instruction and grain direction, if any	4	4	-	-
	<i>Pre-machining readiness</i>	12	12		
	PC11. ensure that dos and don'ts provided in the work instruction is adhered	4	4	-	-
	PC12. trial run the CNC programme if specified by the CNC programmer or provided route card / work instruction	4	4	-	-
	PC13. discuss technical matters related to machine programming with the engineer/ supervisor	4	4	-	-
	NOS Total	48	52	-	-
AAS/N1003: Perform machining operations N1003	<i>Set up a job / workpiece on the machine</i>	18	27		
	PC1. check the drawing issue (in route/ book card) and ensure that the latest issue/ version is being used	2	3	-	-
	PC2. check the calibration certificate of machines before using the same	2	3	-	-
	PC3. study the CNC set-up sheet , drawing, route- card of the component to be machined.	2	3	-	-
	PC4. obtain the relevant cutting tools from the tool crib and verify the same.	2	3	-	-

PC5. identify the right raw material of given size, specification and verify the same	2	3	-	-
PC6. change the cutting tool of the CNC machining Centre as per the process requirement	2	3	-	-
PC7. set up and adjust machine tools, fixtures/ jigs and cutting tools in order to perform machining operations and keep dimensions within the tolerance limit specified in the Standard Operating Procedures (SOPs)/operating manuals/ route card / process sheet	2	3	-	-
PC8. lift the work piece/ metal stock manually or through a hoist and position the same securely in the machine using fasteners and hand tools and verify their positions with measuring instruments	2	3	-	-
PC9. load the component and check the centering and facing of the work pieces and check for alignment of the work pieces as per the final product output specifications	2	3	-	-
<i>Transferring relevant CNC programmes to the machine system and perform machining on the component as per route card / process sheet</i>	22	33		
PC10. start the machine for operations and select the right cutting tool as per the tooling instructions and as per the supervisor's instructions	2	3	-	-
PC11. understanding of the metallurgical properties of the machined parts	2	3	-	-
PC12. check the surface of the workpiece to identify any abrasions, holes, inclination etc.	2	3	-	-
PC13. ensure that the right command is entered in the CNC machine as per defined machining parameters	2	3	-	-
PC14. ensure that cutting tool length is as per process sheet so that it does not cause deflection in the cutting tool	2	3	-	-
PC15. run right CNC programme for type of component to be machined	2	3	-	-
PC16. turn on the coolant valves to maintain temperature in the machine chamber, wherever necessary	2	3	-	-
PC17. brush or spray lubricating material on work pieces where applicable	2	3	-	-
PC18. take appropriate action in case of any irregularities e.g. power failure, rejection, tool breakage etc.	2	2	-	-
PC19. extract or lift jammed pieces from machines through use of wire hooks, lift bars, hands etc.	1	2	-	-
PC20. ensure tool replacement as per recommended tool life	2	3	-	-

	PC21. enter readings of key dimensions on control charts/ record; provide required tool offsetting with the help of supervisor	1	2	-	-
	NOS Total	40	60	-	-
AAS/N1004: Perform post machining activities	PC1. maintain the machine as per proper operational condition/ perform daily maintenance check	2	3	-	-
	PC2. perform minor machine maintenance activities such as oiling or cleaning machine and its components as per the schedules given in the maintenance plan	2	2	-	-
	PC3. clean the hydraulic tank/ gauge/ tools/ fixtures as per the cleaning schedule and the process mentioned in the work instruction/ SOP manual	2	2	-	-
	PC4. add coolant and lubricant in the machine reservoir as per the SOPs	1	2	-	-
	PC5. remove chips from different machine areas and dispose of scrap or waste material into the disposal area in accordance with the company policies and environmental regulations	1	2	-	-
	PC6. perform minor repairs and adjustments to the machine and notify the supervisor/ maintenance team when major service/ repair is required	1	2	-	-
	PC7. return drawings, tools and other measuring equipment to respective department	1	2	-	-
	PC8. with the help of the correct tool remove extra burrs, sharp edges, rust and chips from the metal surface	3	4	-	-
	PC9. use files, hand grinders, wire brushes, or power tools for performing de-burring operations and ensure the usage of Personal Protective Equipment (PPEs) such as eyeglasses and hand gloves	2	4	-	-
	PC10. trim, scrape, or deburr objects or parts using chisels, scrapers, and other hand tools and equipment	3	4	-	-
	PC11. perform shot blasting/ vibro processes for completing de-burring operations (if required)	2	3	-	-
	PC12. measure the specifications of the finished component and verify conformance as per control plan/ work instruction	3	4	-	-
	PC13. use devices like micrometers, vernier calipers, gauges, rulers and any other inspection equipment for measuring specifications with valid calibration status	2	4	-	-

	PC14. note down the observations of the basic inspection process and identify pieces which comply with the specified standards	3	4	-	-
	PC15. separate the defective pieces into two categories pieces which can be repaired/ modified and pieces which are beyond repair, and maintain records of each category	2	3	-	-
	PC16. ensure that any blunt tool is timely and safely replaced by a new tool	3	4	-	-
	PC17. replace machine part as per work instructions, using hand tools or notify supervisor/ engineering personnel for taking corrective actions	2	4	-	-
	PC18. observe the tool change cycle in order to ensure that the selected tool is transferred to the spindle from magazine after the previous tool is transferred to the magazine from the spindle	3	4	-	-
	PC19. ensure that the zero offset value is chosen at the time of tool changing process	2	3	-	-
	NOS Total	40	60	-	-
ASC/N0021: Maintain 5S at work premises	PC1. follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces	1	3	-	-
	PC2. ensure segregation of waste in hazardous/ non-hazardous waste as per the sorting work instructions	1	3	-	-
	PC3. follow the technique of waste disposal and waste storage in the proper bins as per sop	1	3	-	-
	PC4. Segregate the items which are labelled as red tag items for the process area and keep them in the correct places	1	3	-	-
	PC5. sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5s guidelines/ work instructions	1	3	-	-
	PC6. ensure that areas of material storage are not overflowing	1	3	-	-
	PC7. properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	1	3	-	-
	PC8. return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area	1	3	-	-

	PC9. follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards	1	3	-	-
	PC10. follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	1	3	-	-
	PC11. check that the items in the respective areas have been identified as broken or damaged	1	3	-	-
	PC12. follow the given instructions and check for labelling fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc	1	3	-	-
	PC13. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions	1	3	-	-
	PC14. check whether safety glasses are clean and in good condition	1	3	-	-
	PC15. keep all outside surfaces of recycling containers are clean	1	3	-	-
	PC16. ensure that the area has floors swept, machinery clean and generally clean. in case of cleaning, ensure that proper displays are maintained on the floor which indicate potential safety hazards	1	3	-	-
	PC17. check whether all hoses, cabling & wires are clean, in good condition and clamped to avoid any mishap or mix up	1	3	-	-
	PC18. ensure workbenches and work surfaces are clean and in good condition	1	3	-	-
	PC19. follow the cleaning schedule for the lighting system to ensure proper illumination	1	3	-	-
	PC20. store the cleaning material and equipment in the correct location and in good condition	1	3	-	-
	PC21. ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene	1	3	-	-
	PC22. follow the daily cleaning standards and schedules to create a clean working environment	1	3	-	-
	PC23. attend all training programs for employees on 5 s	0.5	2	-	-
	PC24. support the team during the audit of 5 s	1	3	-	-
	PC25. participate actively in employee work groups on 5s and encourage team members for active participation	0.5	2	-	-

	PC26. follow the guidelines for what to do and what not to do to build sustainability in 5s as mentioned in the 5s check lists/ work instructions	1	2	-	-
	NOS Total	25	75	-	-
DGT/VSQ/N0102: Employability Skills	<i>Introduction to Employability Skills</i>	1	1	-	-
	PC1. identify employability skills required for jobs in various industries	-	-	-	-
	PC2. identify and explore learning and employability portals	-	-	-	-
	<i>Constitutional values – Citizenship</i>	1	1	-	-
	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
	PC4. follow environmentally sustainable practices	-	-	-	-
	<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
	PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
	PC6. practice the 21st Century Skills such as Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
	<i>Basic English Skills</i>	2	3	-	-
	PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
	PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
	PC9. write short messages, notes, letters, e-mail etc. in English	-	-	-	-
	<i>Career Development & Goal Setting</i>	1	2	-	-
	PC10. understand the difference between job and career	-	-	-	-
	PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
	<i>Communication Skills</i>	2	2	-	-
	PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
	PC13. work collaboratively with others in a team	-	-	-	-
	<i>Diversity & Inclusion</i>	1	2	-	-
	PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and computing income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline	-	-	-	-

	/Online methods as per requirement				
	PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
	PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
	NOS Total	20	30	-	-
Grand Total		213	337	-	-

Annexure: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Mention the detailed assessment strategy in the provided template.

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records

2. Testing Environment:

- Check the Assessment location, date and time
- If the batch size is more than 30, then there should be 2 Assessors.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the Assessment start and end time to be as 10:00 AM and 05:00 PM
- Check the Eligibility of Attendance

3. Assessment of Quality Assurance levels/Framework:

- Question bank is created by the Subject Matter Experts (SME) are verified by the other SME
- Questions are mapped to the specified assessment criteria
- Assessor must be ToA certified & trainer must be ToT Certified
- Assessment agency must follow the Assessment Guidelines to conduct the Assessment

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period.
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:

- Surprise visit to the assessment location.

- Random audit of the batch
- Random audit of any Candidate

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored
- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage • Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

On the Job:

1. Each module (which covers the job profile of Aerospace CNC Machinist) will be assessed separately.
2. The candidate must score 60% in each module to successfully complete the OJT.
3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:
 - Videos of Trainees during OJT
 - Answer Sheets of Question Banks
 - Assessing the Logbook entries of Trainees at Employer location
 - Employer Performance Feedback.
4. Assessment of each Module will ensure that the candidate is able to:
 - Effective engagement with the customers
 - Understand the working of various tools and equipment

Annexure: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf