

Qualification Pack



Advance Pattern Maker(CAD/CAM)

QP Code: AMH/Q1101

Version: 2.0

NSQF Level: 5

Apparel, Madeups & Home Furnishing Sector Skill Council || Flat No. A-312 to A-323, 3rd Floor,
Somdatt Chamber-1, Bhikaji Cama Place, Africa Avenue
New Delhi-110066

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AMH/Q1101: Advance Pattern Maker(CAD/CAM)

Brief Job Description

The advance pattern maker uses the CAD system to recreate the pattern design techniques by transferring ideas to the computer, digitizing and modifying patterns and also using the CAM to get the patterns and lays cut out in the actual sizes

Personal Attributes

An Advance Pattern Maker needs to have the knowledge to interpret instructions, specs or sample clothing designs and working of the particular software/system to produce a pattern. He/she should also have basic mathematical skills, particularly making calculations and measuring. Also, he/she should have good written and oral communication skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [AMH/N0103: Maintain health, safety and secure work place with Gender and PwD Sensitization](#)
2. [AMH/N1101: Pattern development through CAD/CAM](#)
3. [AMH/N1102: Maintenance of work area, machinery, tools and equipment.](#)

Qualification Pack (QP) Parameters

Sector	Apparel
Sub-Sector	Apparel
Occupation	Pattern Making
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7435.90
Minimum Educational Qualification & Experience	Graduate with 3 Years of experience in relevant field OR Certificate-NSQF (Level 4) with 2 Years of experience as pattern Master

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Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Certification Course in CAD/CAM , preferably
Minimum Job Entry Age	18 Years
Last Reviewed On	27/01/2022
Next Review Date	30/12/2024
Deactivation Date	30/12/2024
NSQC Approval Date	30/12/2021
Version	2.0
Reference code on NQR	2021/APR/AMHSSC/04770
NQR Version	1.0

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AMH/N0103: Maintain health, safety and secure work place with Gender and PwD Sensitization

Description

This unit provides performance criteria, knowledge & understanding, and skills & abilities required to comply with health, safety, and security requirements at the workplace and covers procedures to prevent, control and minimize risk to self and others

Scope

The scope covers the following :

- Potential risks associated with hazardous processes and guidelines for medical emergencies.

Elements and Performance Criteria

Hazards and potential risks associated with the process, guidelines for medical emergencies and evacuation process; gender & PwD sensitization

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

- PC1.** Comply with health, safety gender and PwD (People with disability) related instructions applicable to the workplace.
- PC2.** Actively participate in mock drills/evacuation procedures and group discussions related to a safe and secure work place.
- PC3.** Training sensitization programs for gender and PwD awareness organized at the workplace.
- PC4.** Use and maintain materials and equipment as per protocol.
- PC5.** Capable to perform first-aid, firefighting or any other emergency response procedures and follow organization procedures for shutdown and evacuation when required
- PC6.** Monitor the work place and processes for potential risks/ threats to supervisors or other authorized personnel and ensure gender equality and PwD (People with disability) security.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** The importance of gender equality being followed in the organization and policies for reporting any harassment or inappropriate behavior
- KU2.** How to accommodate employees with disabilities; etiquette to adhere to and proper language and terminology
- KU3.** How to communicate, offer help, respecting space, parking etc. for people with disabilities or special needs.
- KU4.** Promote a safe, accessible and healthy workplace for disabled employees.
- KU5.** Health and safety related practices applicable at the workplace.
- KU6.** Potential hazards, risks and threats based on nature of operations; the ways to minimize these and response to these scenarios.

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- KU7.** The code of conduct (COC) and Social Accountability standards followed by the organization/ industry
- KU8.** Layout of the plant and details of emergency exits, escape routes, emergency equipment and assembly points.
- KU9.** Reporting protocol and documentation required.
- KU10.** The occupational health and safety risks and methods; importance of personal protective equipment and method of use.
- KU11.** Identification, handling and storage of hazardous substances.
- KU12.** Proper disposal system for waste and by-products.
- KU13.** Signage related to health and safety and their meaning.
- KU14.** The importance of personal health and hygiene and the ill effects of usage of intoxicants such as alcohol, tobacco and drugs.

Generic Skills (GS)

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

- GS1.** Create a positive and inclusive workplace atmosphere without any kind of bias/discrimination towards any employee.
- GS2.** Actively take part in any discussion/workshop organized for gender sensitization training
- GS3.** Read and comprehend written instructions related to gender equality and Pwd awareness/issues in the organization
- GS4.** Identify and report any harassment or inappropriate behavior towards any employee
- GS5.** Identify and report any distinction, exclusion, harassment or inappropriate behavior towards any employee
- GS6.** Document and report any health and safety related incidents/ accidents to the authorized personnel.
- GS7.** Read all organizational and equipment related health and safety manuals and documents
- GS8.** Read instructions, guidelines/procedures/rules related to the worksite and machine operations
- GS9.** Keep abreast with the latest developments for innovative safety services and tools by reading brochures, pamphlets, magazines etc
- GS10.** Discuss the latest approach for safety and security with the team
- GS11.** Evaluate and use correct PPE kit and other safety gear while at the workplace
- GS12.** Work with supervisors/ team mates to carry out work related tasks as per schedule
- GS13.** Keep work area free from potential hazards
- GS14.** Follow organizational procedures pertaining to health and safety.
- GS15.** Take appropriate actions during emergencies, accidents or fire at the workplace
- GS16.** Resolve issues pertaining to malfunctions in machineries and report if required
- GS17.** Identify emergency situations; their cause & effect relationship and suggest probable solutions
- GS18.** Analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

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- GS19.** Create a positive and inclusive workplace atmosphere without any kind of bias/discrimination towards any employee
- GS20.** Actively take part in any discussion/workshop organized for gender sensitization training
- GS21.** Read and comprehend written instructions related to gender equality issues in the organization

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Hazards and potential risks associated with the process, guidelines for medical emergencies and evacuation process; gender & PwD sensitization</i>	22	12	-	6
PC1. Comply with health, safety gender and PwD (People with disability) related instructions applicable to the workplace.	4	2	-	1
PC2. Actively participate in mock drills/evacuation procedures and group discussions related to a safe and secure work place.	4	2	-	1
PC3. Training sensitization programs for gender and PwD awareness organized at the workplace.	4	2	-	1
PC4. Use and maintain materials and equipment as per protocol.	3	2	-	1
PC5. Capable to perform first-aid, firefighting or any other emergency response procedures and follow organization procedures for shutdown and evacuation when required	4	2	-	1
PC6. Monitor the work place and processes for potential risks/ threats to supervisors or other authorized personnel and ensure gender equality and PwD (People with disability) security.	3	2	-	1
NOS Total	22	12	-	6

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National Occupational Standards (NOS) Parameters

NOS Code	AMH/N0103
NOS Name	Maintain health, safety and secure work place with Gender and PwD Sensitization
Sector	Apparel
Sub-Sector	Apparel, Made-Ups & Home Furnishing
Occupation	Sewing, Sewing, Specialized Sewing, Sampling, Ironing, Hand Embroidery, Production Supervision, Computerized Embroidery, Laying, Quality Control
NSQF Level	4
Credits	TBD
Version	5.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2024
NSQF Clearance Date	30/12/2021

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AMH/N1101: Pattern development through CAD/CAM

Description

This unit is about how the advance pattern maker manages to develop the patterns using CAD/CAM software

Scope

The scope covers the following :

- Prepare the prerequisites for CAD/CAM operation
- Operate the CAD/CAM

Elements and Performance Criteria

Prepare the prerequisites for CAD/CAM operation

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

- PC1.** Download and organize information obtained by designer/buyer
- PC2.** Analyze specific information and translating according to company procedure
- PC3.** Coordinate with merchandiser to ensure clarity of information and resolve any possible misinterpretations

Operate the CAD/CAM

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

- PC4.** Draft the pattern or digitize the manual pattern on the CAD software as per specification given
- PC5.** Adjust the pattern specifications as per the standard and allowances required
- PC6.** Incorporate shrinkage and perform size wise grading of patterns as provided in the BOM (bill of material)
- PC7.** Determine the cut ratio plan
- PC8.** Perform the most efficient marker (lay planning) according to the configuration intended
- PC9.** Set parameters on CAM as per required output
- PC10.** Ensure the design output is cut and hand over to the next department
- PC11.** Ensure the work is saved as a back-up before shutting down the CAD machine
- PC12.** Take printout of mini marker to be handed over to the merchandiser, for reference
- PC13.** Shut down, after every use, the CAD/CAM system carefully and in accordance with company instructions

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Organization's policies, procedures, guidelines and standards for dealing with buyers/clients

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- KU2.** Recognizing and adapting to cultural differences in the workplace, including modes of behavior and interactions
- KU3.** Set the machine parameters as per manufacturer's instructions
- KU4.** Completing work systematically with attention to detail without damage to goods and equipment
- KU5.** Garment construction techniques and processes
- KU6.** CAD/CAM operating system and its principles
- KU7.** Process of modeling, testing and grading using CAD
- KU8.** Lay planning with accuracy

Generic Skills (GS)

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

- GS1.** Complete accurate well written work with attention to detail
- GS2.** Communicate effectively with supervisors, managers etc
- GS3.** Follow guidelines/procedures/rules and service level agreements
- GS4.** Read and understand the buyer/client's requirements
- GS5.** Listen effectively and orally communicate information accurately
- GS6.** Ask for clarification and advice from relevant personnel others
- GS7.** Follow rule-based decision-making processes
- GS8.** Make decisions on a suitable course of action or response
- GS9.** Plan and organize your work to achieve targets and deadlines
- GS10.** Plan processes and encourage in the change of ideas/designs
- GS11.** Clarification on the design to be developed with the team members
- GS12.** Assess/evaluate design processes
- GS13.** Analyse the marker lay and specification sheet
- GS14.** Provide opinions on work in a detailed and constructive way

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare the prerequisites for CAD/CAM operation</i>	3	12	-	3
PC1. Download and organize information obtained by designer/buyer	1	5	-	1
PC2. Analyze specific information and translating according to company procedure	1	6	-	1
PC3. Coordinate with merchandiser to ensure clarity of information and resolve any possible misinterpretations	1	1	-	1
<i>Operate the CAD/CAM</i>	33	114	-	15
PC4. Draft the pattern or digitize the manual pattern on the CAD software as per specification given	6	30	-	3
PC5. Adjust the pattern specifications as per the standard and allowances required	4	9	-	1
PC6. Incorporate shrinkage and perform size wise grading of patterns as provided in the BOM (bill of material)	8	23	-	3
PC7. Determine the cut ratio plan	4	9	-	2
PC8. Perform the most efficient marker (lay planning) according to the configuration intended	3	12	-	1
PC9. Set parameters on CAM as per required output	1	10	-	1
PC10. Ensure the design output is cut and hand over to the next department	1	5	-	1
PC11. Ensure the work is saved as a back-up before shutting down the CAD machine	2	4	-	1
PC12. Take printout of mini marker to be handed over to the merchandiser, for reference	2	6	-	1

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. Shut down, after every use, the CAD/CAM system carefully and in accordance with company instructions	2	6	-	1
NOS Total	36	126	-	18

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National Occupational Standards (NOS) Parameters

NOS Code	AMH/N1101
NOS Name	Pattern development through CAD/CAM
Sector	Apparel
Sub-Sector	Apparel
Occupation	PATERN MAKING
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	30/12/2024
NSQC Clearance Date	30/12/2021

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AMH/N1102: Maintenance of work area, machinery, tools and equipment.

Description

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Abilities required to organize/ maintain work areas and activities to ensure tools and machines are maintained as per norms. It also covers procedures and compliance standards to identify, prevent, control, minimize and eliminate hazards and potential risks to self and others at the workplace

Scope

The scope covers the following :

- To maintain the work area, tools and machines and observe greening of job functions.

Elements and Performance Criteria

To maintain the work area, tools and machines and observe greening of job functions.

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

- PC1.** Handle materials, equipment, computer and software safely and correctly to maintain a clean and hazard free working area and support adaptation to more environmentally friendly processes
- PC2.** Use correct handling procedures and maintain tools and equipment; and inculcate sustainable consumption practices and offer relevant greening solutions
- PC3.** Work in comfortable position and maintain correct posture
- PC4.** Deal with work interruptions effectively
- PC5.** Carry out running maintenance and/or cleaning within one's responsibility and agreed schedules
- PC6.** Report unsafe equipment and other dangerous occurrences to concerned personnel
- PC7.** Use cleaning equipment and methods appropriate for the work to be carried out
- PC8.** Request for upgrading of system or software when required for effective working
- PC9.** Always maintain a backup file when working on various design software
- PC10.** All soft copies of design work to be maintained in files as well for future reference

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Importance of good health, Personal hygiene and duty of care
- KU2.** Importance of safe working practices and code of conduct (COC) and Social Accountability standards followed by the organization/ industry
- KU3.** Limits of your own responsibility
- KU4.** The production process and the specific work activities that relate to the whole process
- KU5.** The line and importance of effective communication with superiors and colleagues

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- KU6.** The organization's rules, codes, quality standards, reporting procedures and guidelines (including timekeeping)
- KU7.** Work instructions and specifications and interpret them accurately
- KU8.** Method to make use of the information detailed in specifications and instructions
- KU9.** Relation between work role and the overall manufacturing process
- KU10.** The importance of taking action when problems are identified
- KU11.** Different ways of minimizing waste
- KU12.** The importance of running maintenance and regular cleaning
- KU13.** Effects of contamination on products i.e., Machine oil, dirt
- KU14.** Common faults with equipment and the method to rectify
- KU15.** Maintenance procedures
- KU16.** Safe working practices for cleaning and the method of carrying them out
- KU17.** Making conscious and sustainable decisions for achieving effective and green workplace.

Generic Skills (GS)

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

- GS1.** Fill in the information required to communicate the level of quality
- GS2.** Communicate with others in writing (wherever applicable)
- GS3.** Use the accurate terminology
- GS4.** Follow manuals/procedures/and compliance policies
- GS5.** Listen effectively and orally communicate information accurately Update actively with m
- GS6.** Listen effectively and orally communicate information accurately
- GS7.** Communicate proactively on critical issues
- GS8.** Follow rule-based decision-making processes
- GS9.** Make decisions on a suitable course of action or response
- GS10.** Identify situation that need escalation on quality issues and seek intervention
- GS11.** Plan and organize your work to achieve targets and deadlines
- GS12.** Consult and coordinate for effective delivery
- GS13.** Apply problem-solving approaches in different situations
- GS14.** Refer anomalies to the particular personnel
- GS15.** Seek clarification on problems from others
- GS16.** Analyze needs, requirements and dependencies in order to meet your work requirements
- GS17.** Seek participation of members from Quality, Production, Audit or any other team for effective solutions
- GS18.** Provide opinions on work in a detailed and constructive way to the concerned personnel
- GS19.** Apply balance judgments to different situations
- GS20.** Make conscious and sustainable decisions that help reduce, rescue, and recycle the company resources
- GS21.** Identify and replace processes that create unnecessary waste

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>To maintain the work area, tools and machines and observe greening of job functions.</i>	16	56	-	8
PC1. Handle materials, equipment, computer and software safely and correctly to maintain a clean and hazard free working area and support adaptation to more environmentally friendly processes	1	5	-	0.5
PC2. Use correct handling procedures and maintain tools and equipment; and inculcate sustainable consumption practices and offer relevant greening solutions	2	10	-	1
PC3. Work in comfortable position and maintain correct posture	2	10	-	1
PC4. Deal with work interruptions effectively	1	1	-	0.5
PC5. Carry out running maintenance and/or cleaning within one's responsibility and agreed schedules	3	15	-	0.5
PC6. Report unsafe equipment and other dangerous occurrences to concerned personnel	1	-	-	1
PC7. Use cleaning equipment and methods appropriate for the work to be carried out	2	5	-	1
PC8. Request for upgrading of system or software when required for effective working	1	-	-	0.5
PC9. Always maintain a backup file when working on various design software	2	5	-	1
PC10. All soft copies of design work to be maintained in files as well for future reference	1	5	-	1
NOS Total	16	56	-	8

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National Occupational Standards (NOS) Parameters

NOS Code	AMH/N1102
NOS Name	Maintenance of work area, machinery, tools and equipment.
Sector	Apparel
Sub-Sector	Apparel
Occupation	Pattern Making
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	30/12/2024
NSQC Clearance Date	30/12/2021

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 proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on 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. examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each.
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria.
6. To pass the Qualification Pack, every trainee should score a minimum of 70% aggregate in QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

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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
AMH/N0103.Maintain health, safety and secure work place with Gender and PwD Sensitization	22	12	-	6	40	13
AMH/N1101.Pattern development through CAD/CAM	36	126	-	18	180	60
AMH/N1102.Maintenance of work area, machinery, tools and equipment and observe greening of job functions.	16	56	-	8	80	27
Total	74	194	-	32	300	100

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Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

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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.

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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.