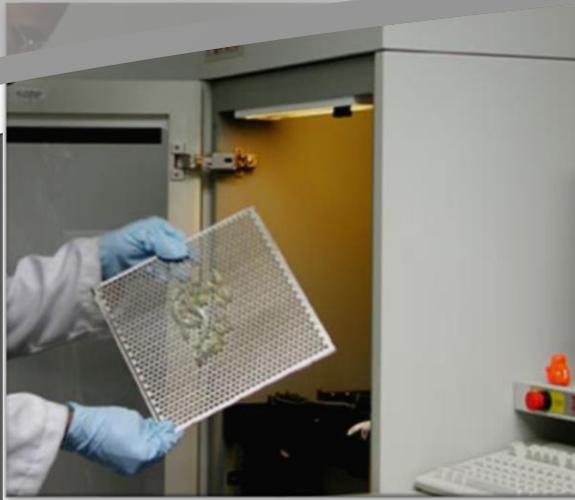


QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR GEMS & JEWELLERY INDUSTRY



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What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack – CAM Machine Operator

SECTOR: GEMS & JEWELLERY

SUB-SECTOR: Cast and Diamonds-Set Jewellery

OCCUPATION: Master making

REFERENCE ID: G&J/Q2401

ALIGNED TO: NCO-2004/ NIL

CAM Machine Operator: A Computer-aided Manufacturing (CAM) machine operator produces jewellery prototype using different technologies.

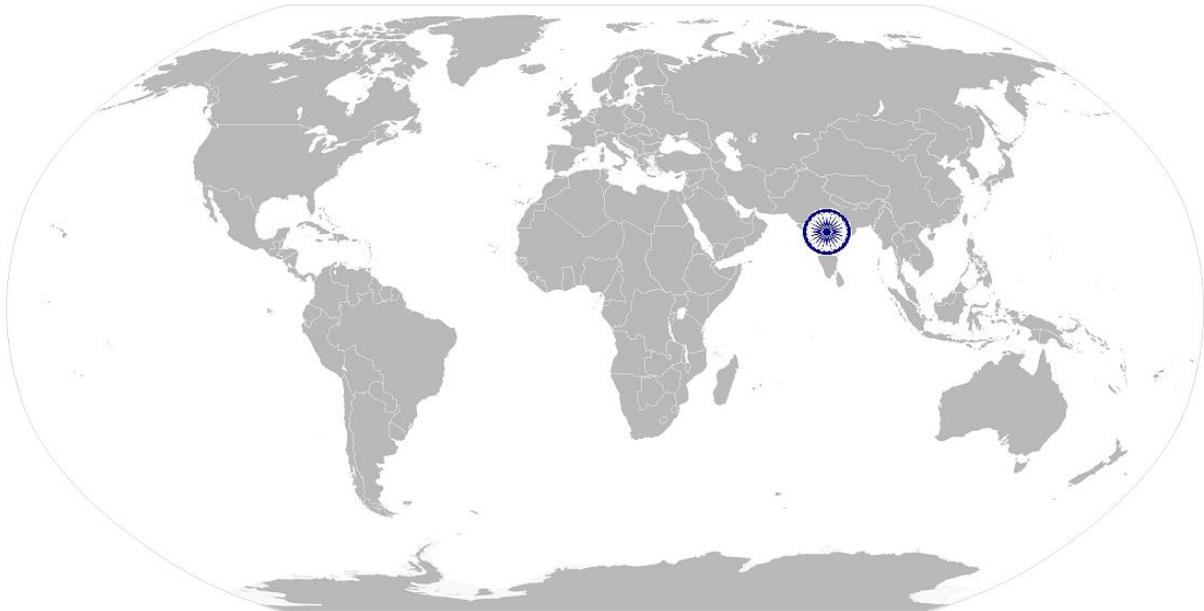
Brief Job Description: The individual interprets the three-dimensional (3D) jewellery design, feeds design parameters in the CAM machine and produces resin based prototypes. The model prototype serves as a sample for manufacturing jewellery or components.

Personal Attributes: The job requires the individual to be creative and have analytical thought process, attention to details, quick response, and ability to work in a process driven team. The individual must also have problem solving skills in order to maintain CAM machine and produce defect-free prototype of product.

Qualifications Pack Code	G&J/Q2401		
Job Role	CAM machine operator		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Sector	Gems & Jewellery	Drafted on	29/05/13
Sub-sector	Cast and Diamond-set Jewellery	Last reviewed on	30/07/13
Occupation	Master making	Next review date	15/07/15

Job Role	CAM Machine Operator
Role Description	This unit is about producing resin-based prototype of jewellery design by using CAM machine
NVEQF/NVQF level	4
Minimum Educational Qualifications	Minimum: 12 th standard or diploma
Maximum Educational Qualifications	
Training	CAD design
Experience	Not applicable
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> G&J/N2401 Produce resin-based jewellery prototype using milling G&J/N2402 Use rapid prototyping technology (RPT) G&J/N9901 Respect and maintain IPR G&J/N9902 Coordinate with others G&J/N9905 Maintain occupational health and safety <p>Optional: Not applicable</p>
Performance Criteria	As described in the relevant OS units

National Occupational Standard



Overview

This unit is about producing resin based prototype using CAM machine for a range of jewellery designs, for use in mass production of jewellery products in the jewellery manufacturing process.

G&J/N2401

Produce resin-based jewellery prototype using milling

National Occupational Standard

Unit Code	G&J/N2401
Unit Title (Task)	Produce resin-based prototype using CAM machine
Description	This OS unit is about producing resin based prototype using CAM machine for a range of jewellery designs. The prototype is used for manufacturing jewellery or components in large quantity
Scope	<p>This unit/task covers the following:</p> <p>Receive the design concepts and instructions from different sources</p> <ul style="list-style-type: none"> • collect 3-dimensional (3D) designs from merchandiser or designer • inspect 3D designs for practicality of manufacturing model • interpret and understand the design requirement in terms of size, weight, shape, stones, etc. <p>Produce resin based prototype</p> <ul style="list-style-type: none"> • upload the 3D CAD design into the computer system • set up CAM machine • select milling fixture as per design • fix up the frame and clamp • calibrate the fixtures and set the positions • select cutting beads and install using magnetic clamp • select the resin type, size and thickness according to jewellery design • start the machine for milling operations • as per the design requirement, perform rolling operations • realign the machine for double sided operations • set the jewellery prototype onto the rolling machine • monitor the operations • check quality of the prototype resin based jewellery model against design <p>Return produced resin jewellery model to merchandiser or product development head</p> <ul style="list-style-type: none"> • self-check each design in terms of surface finishing, dimensions and clarity • ensure timely delivery of the required number of quality okayed resin jewellery models <p>Report problems related to:</p> <ul style="list-style-type: none"> • complexity of designs • faulty equipment or software operation and report them to the appropriate person • errors on any resin jewellery models made, and identify appropriate action to rectify • reasons for anticipated delays that may adversely affect delivery

G&J/N2401 Produce resin-based jewellery prototype using milling

Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Producing resin based prototype using CAM machine	To be competent, the user/individual on the job must be able to: PC1. accurately set up and calibrated CAM machine PC2. select appropriate cutting tools PC3. select resin type, size and thickness according to jewellery design PC4. accurately measure design dimensions (prong thickness, gap between diamonds) PC5. prepare detailed note for the precision required at the manufacturing stage PC6. inspect and report 3D design errors before CAM operation
Productivity	To be competent, the user/individual on the job must be able to: PC7. timely deliver resin based prototype/model for mass production of jewellery pieces PC8. produce number of prototype/model as per target given
Quality of output	To be competent, the user/individual on the job must be able to: PC9. produce quality approved models as per the design and instructions given by merchandiser or designer PC10. minimise productions disruptions because of model imperfections
Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. company's policies on: quality, incentives, delivery standards, safety and hazards, integrity and IPR, personnel management and dress code KA2. importance of the individual's role in the workflow KA3. reporting structure
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. use of computers, cam workstation software and hardware, MS office, data management software, internet, etc. KB2. the principles of drawing jewellery shapes KB3. different type of jewellery products: rings, bracelets, pendants, necklace, etc. KB4. different type of resins and their properties KB5. manufacturing drawing conventions KB6. basic manufacturing techniques including types of diamonds and/or gemstones settings KB7. basics of design techniques, tools, principles involved in production of precision designs, blueprints, drawings, and models
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Reading and writing skills The user/ individual on the job needs to know and understand how to: SA1. read notes, designs and instructions in terms of master model making SA2. read company rules and compliance documents required to complete the work

G&J/N2401

Produce resin-based jewellery prototype using milling

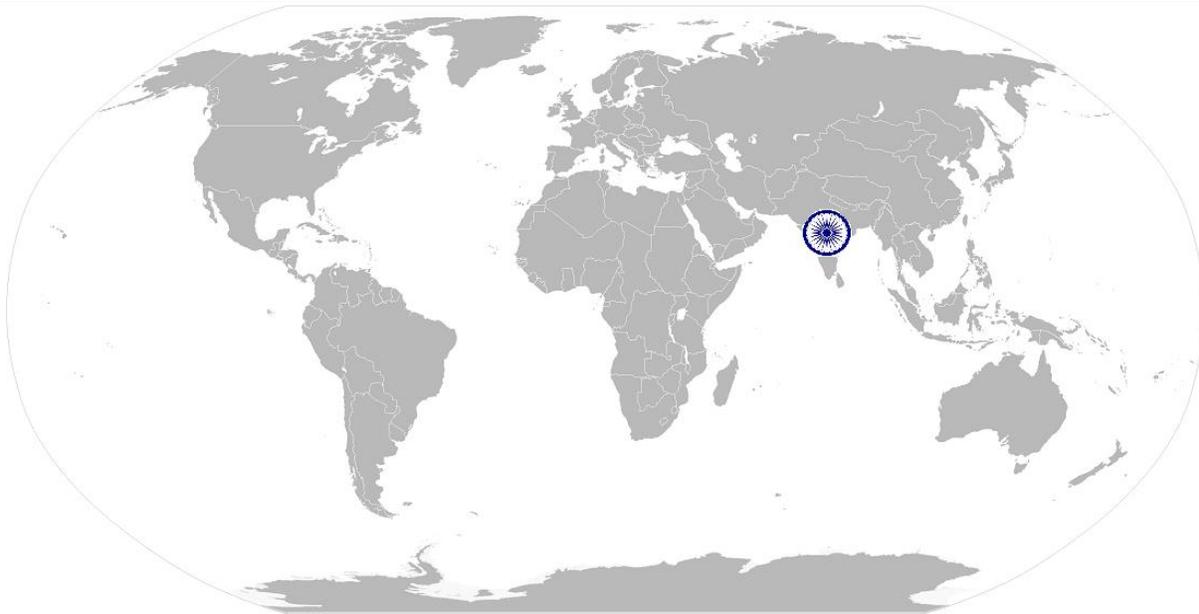
	SA3. read technical drawings and 3D CAD design
	Calculation and Geometry skills
	The user/individual on the job needs to know and understand how to: SA4. measure the size and thickness according to jewellery design SA5. assess accuracy of alignment of fixtures and resin into the CAM machine SA6. mathematical calculations used in computer aided modelling
	Teamwork and multitasking
B. Professional Skills	The user/individual on the job needs to know and understand how to: SA7. share work load when multiple deliverables are required SA8. deliver the model on time
	Creative thinking
	The user/individual on the job needs to know and understand: SB1. visualisation and interpretation of 3D jewellery designs SB2. translation of 3D jewellery designs to prototype/model
	Computer and Machine operations
	The user/individual on the job needs to know and understand how to: SB3. use computers and software SB4. use CAM machine and its applications SB5. maintain CAM machine
	Reflective thinking
	The user/individual on the job needs to know and understand how to: SB6. improve work processes or greater productivity SB7. pre-empt complexity of the design in order to increase the production speed of CAM modelling SB8. provide information relevant to production department SB9. suggest necessary design changes for practicality and maintaining look of the jewellery designs
	Critical thinking
	The user/individual on the job needs to know and understand how to: SB10. anticipate process disruption and reasons for delay

G&J/N2401

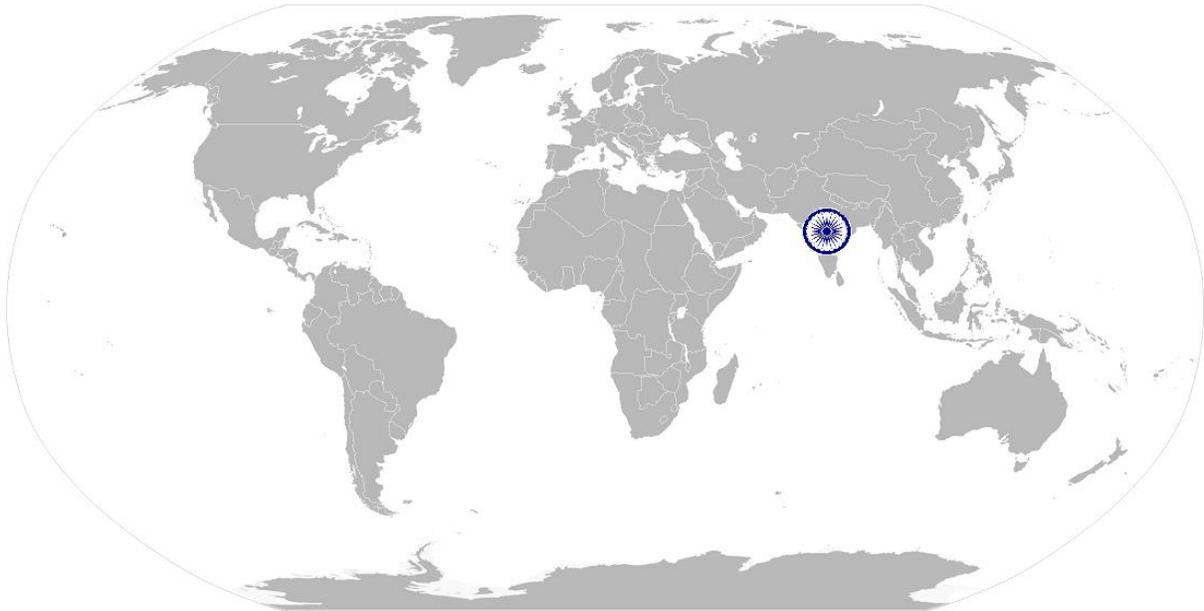
Produce resin-based jewellery prototype using milling

NOS Version Control

NOS Code	G&J/N2401		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	29/05/13
Industry Sub-sector	Cast and Diamond-set Jewellery	Last reviewed on	30/07/13
Occupation	Master making	Next review date	15/06/15



National Occupational Standard



Overview

This unit is about producing resin based prototype using rapid prototyping CAM machine for a range of jewellery designs, for further use in mass production of jewellery products in the jewellery manufacturing process.

G&J/N2402

Use rapid prototyping technology

National Occupational Standard

Unit Code	G&J/N2402
Unit Title (Task)	Produce resin-based prototype using RPT CAM machine
Description	This OS unit is about producing resin based prototype using rapid prototyping CAM machine for a range of jewellery designs. The prototype is used for manufacturing jewellery or components in large quantity
Scope	<p>This unit/task covers the following:</p> <p>Receive the design concepts and prepare for RPT machine operations</p> <ul style="list-style-type: none"> • receive CAD design file of jewellery in STL or SLC format • use Magic software to check file for properly aligned and merged file parts • use shell option to combine files into single part • run checks for naked-edges to avoid machine error • create supports on RPT for jewellery to support delicate or critical parts • select automatic options in software for creating supports • save Magic file • save STL file <p>Use RPT machine for generating resin prototype</p> <ul style="list-style-type: none"> • use uploading software to upload the two files on appropriate platform • calibrate the machine for vibration minimiser • select appropriate ratios up to required limits, for calibration • remove calibrate plate • select resin type for, say, casting or die-cutting • fix platform to develop the top-down model • note the duration for making <p>Remove model from RPT machine</p> <ul style="list-style-type: none"> • take the platform out along with the prototype piece(s) made • peel out the prototype • use isopropyl alcohol to clean the prototype • dry in UV machine • send for casting process <p>Report problems related to:</p> <ul style="list-style-type: none"> • complexity of designs • faulty equipment or software operation and report them to the appropriate person • errors on any resin jewellery models made, and identify appropriate action to rectify • reasons for anticipated delays that may adversely affect delivery

G&J/N2402

Use rapid prototyping technology

Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Producing resin based prototype using CAM machine	To be competent, the user/individual on the job must be able to: PC1. accurately set up and calibrated CAM machine PC2. select appropriate cutting tools PC3. select resin type, size and thickness according to jewellery design PC4. accurately measure design dimensions (prong thickness, gap between diamonds) PC5. prepare detailed note for the precision required at the manufacturing stage PC6. inspect and report 3D design errors before CAM operation PC7. upload file correctly PC8. calibrate accurately for minimum vibration PC9. clean the prototype properly
Productivity	To be competent, the user/individual on the job must be able to: PC10. timely deliver resin based prototype/model for mass production of jewellery pieces PC11. produce number of prototype/model as per target given
Quality of output	To be competent, the user/individual on the job must be able to: PC12. produce quality approved models as per the design and instructions given by merchandiser or designer PC13. minimise productions disruptions because of model imperfections PC14. ensure that multiple pieces on the prototype platform do not touch one another
Knowledge and Understanding (K)	
C. Organizational Context	The user/individual on the job needs to know and understand: KA1. company's policies on: quality, incentives, delivery standards, safety and hazards, integrity and IPR, personnel management and dress code KA2. importance of the individual's role in the workflow KA3. reporting structure
D. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. use of computers, 3-D design software, CAM workstation software and hardware, MS office, data management software, internet, etc. KB2. the principles of drawing jewellery shapes KB3. different type of jewellery products: rings, bracelets, pendants, necklace, etc. KB4. different type of resins and their properties KB5. manufacturing drawing conventions KB6. basic manufacturing techniques including types of diamonds and/or gemstones settings KB7. basics of design techniques, tools, principles involved in production of precision designs, blueprints, drawings, and models KB8. RPT machine operations KB9. identification location and number of supports as well as breakage points

G&J/N2402

Use rapid prototyping technology

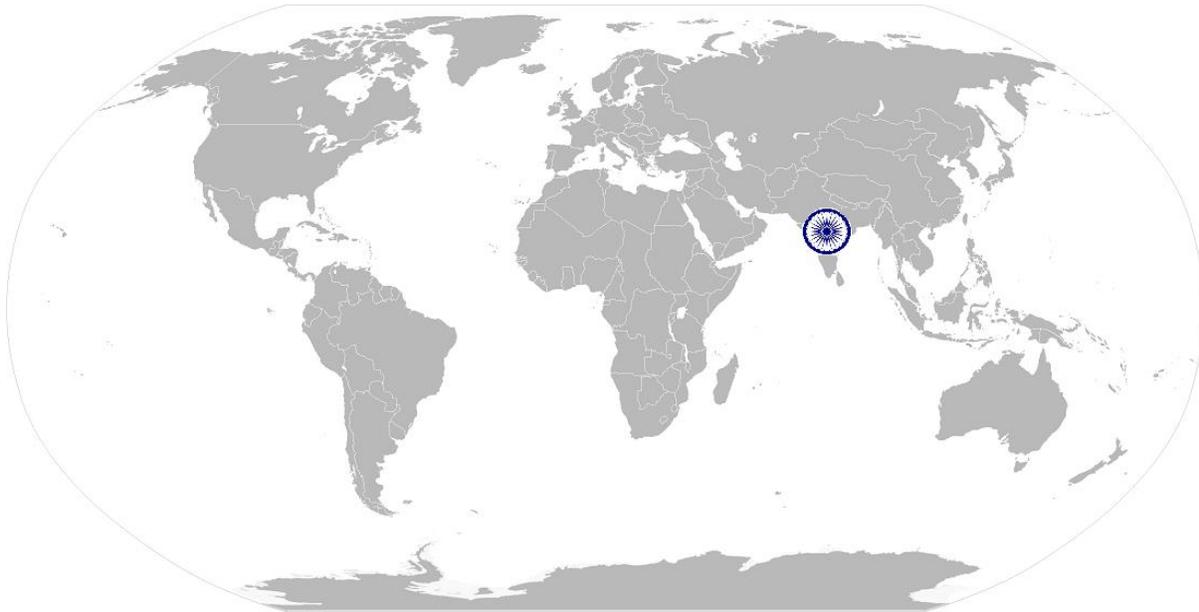
	<p>KB10. minimum thickness possible with the machine KB11. Wiper and milling technologies(alternatives)</p>
Skills (S) [Optional]	
C. Core Skills/ Generic Skills	Reading and writing skills
	The user/ individual on the job needs to know and understand how to: SA1. read notes, designs and instructions in terms of master model making SA2. read company rules and compliance documents required to complete the work SA3. read technical drawings and 3D CAD design
	Calculation and Geometry skills
	The user/individual on the job needs to know and understand how to: SA4. measure the size and thickness according to jewellery design SA5. assess accuracy of alignment of fixtures and resin into the CAM machine SA6. mathematical calculations used in computer aided modelling
	Teamwork and multitasking
	The user/individual on the job needs to know and understand how to: SA7. share work load when multiple deliverables are required SA8. deliver the model on time
D. Professional Skills	Creative thinking
	The user/individual on the job needs to know and understand: SB1. visualisation and interpretation of 3D jewellery designs SB2. translation of 3D jewellery designs to prototype/model
	Computer and Machine operations
	The user/individual on the job needs to know and understand how to: SB3. use computers and software SB4. use CAM machine and its applications SB5. maintain CAM machine
	Reflective thinking
	The user/individual on the job needs to know and understand how to: SB6. improve work processes or greater productivity SB7. pre-empt complexity of the design in order to increase the production speed of CAM modelling SB8. provide information relevant to production department SB9. suggest necessary design changes for practicality and maintaining look of the jewellery designs
	Critical thinking
	The user/individual on the job needs to know and understand how to: SB10. anticipate process disruption and reasons for delay

G&J/N2402

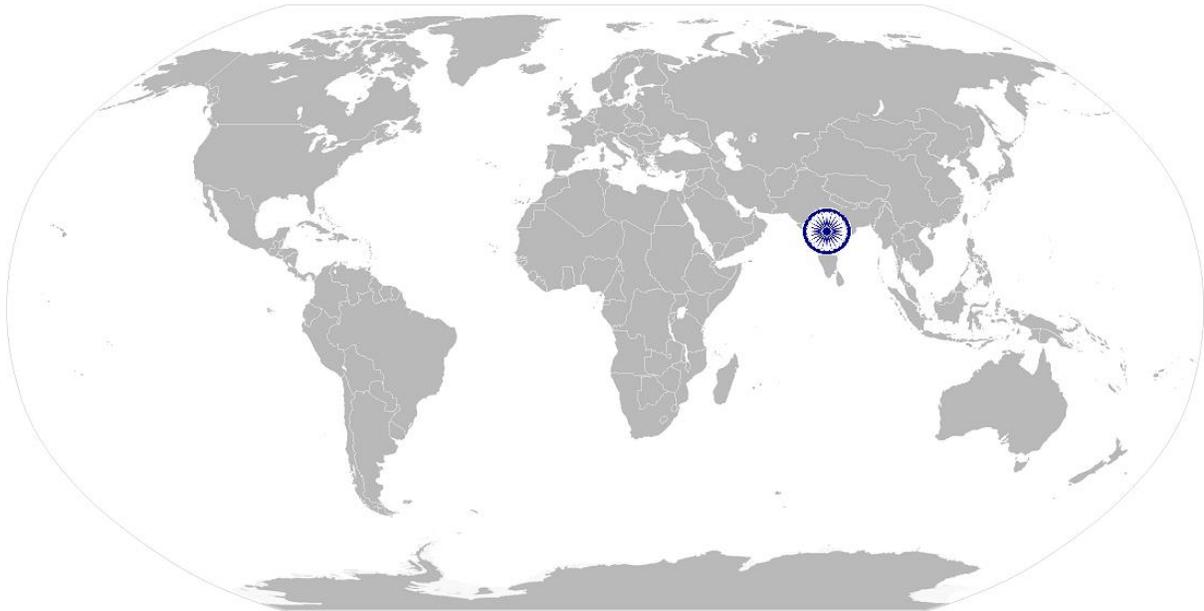
Use rapid prototyping technology

NOS Version Control

NOS Code	G&J/N2402		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	29/05/13
Industry Sub-sector	Cast and Diamond-set Jewellery	Last reviewed on	30/07/13
Occupation	Master making	Next review date	15/06/15



National Occupational Standard



Overview

This unit is about respecting intellectual property rights of the company's products and designs as well as avoiding infringement on IPR of other companies.

G&J/N9901

Respect and maintain IPR

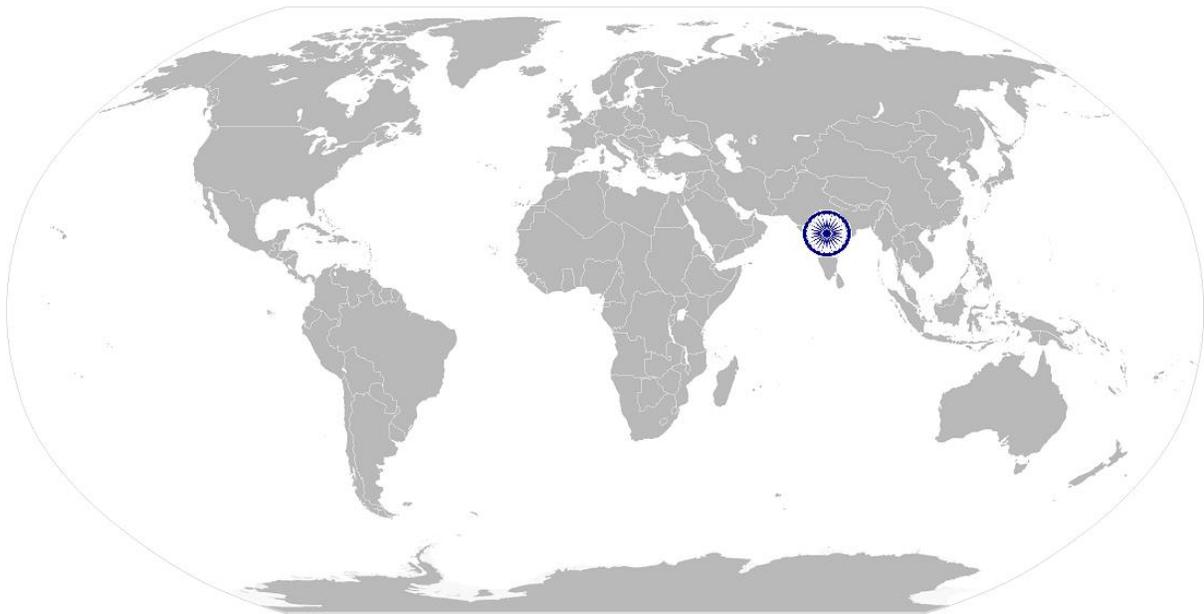
National Occupational Standard

Unit Code	G&J/N9901
Unit Title (Task)	Maintain IPR of company and respect IPR of other companies
Description	This OS unit is about protecting company's IPR and avoiding infringement to IPR of other companies
Scope	<p>This unit/task covers the following:</p> <p>Protect company's Intellectual Property Rights (IPR)</p> <ul style="list-style-type: none"> prevent leak of new designs to competitors by reporting on time be aware of any of company's product or design patents report IPR violations observed in the market, to supervisor or company heads <p>Avoid infringement to IPR of other companies</p> <ul style="list-style-type: none"> read copyright clause of the material published on the internet and any other printed material consult supervisor or senior management when in doubt about using publicly available information report any infringement observed in the company
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Respecting and Maintaining IPR	To be competent, the user/individual on the job must: PC1. be able to spot plagiarism and report PC2. be aware of patents and IPR PC3. not be involved in IPR violations
Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. company's policies on IPR and plagiarism KA2. reporting structure KA3. company's unique product range
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. patents and IPR laws KB2. how IPR protection is important for competitiveness of a company
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills
	The user/ individual on the job needs to know and understand how to: SA1. effectively communicate any observed IPR violations or order leaks
B. Professional Skills	Decision making
	The user/individual on the job needs to know and understand how to: SA2. report potential sources of violations

G&J/N9901

Respect and maintain IPR

	Reflective thinking
	The user/individual on the job needs to know and understand to: SA3. learn from past mistakes and report IPR violations on time
	Critical thinking
	The user/individual on the job needs to know and understand how to: SA4. spot signs of violations and alert authorities in time

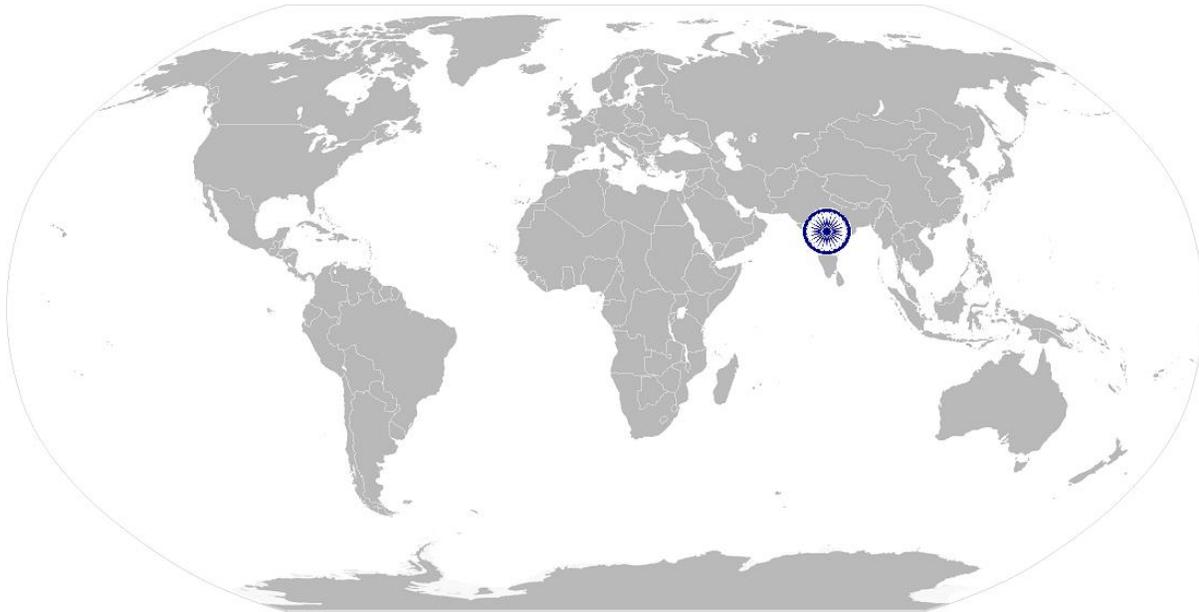


G&J/N9901

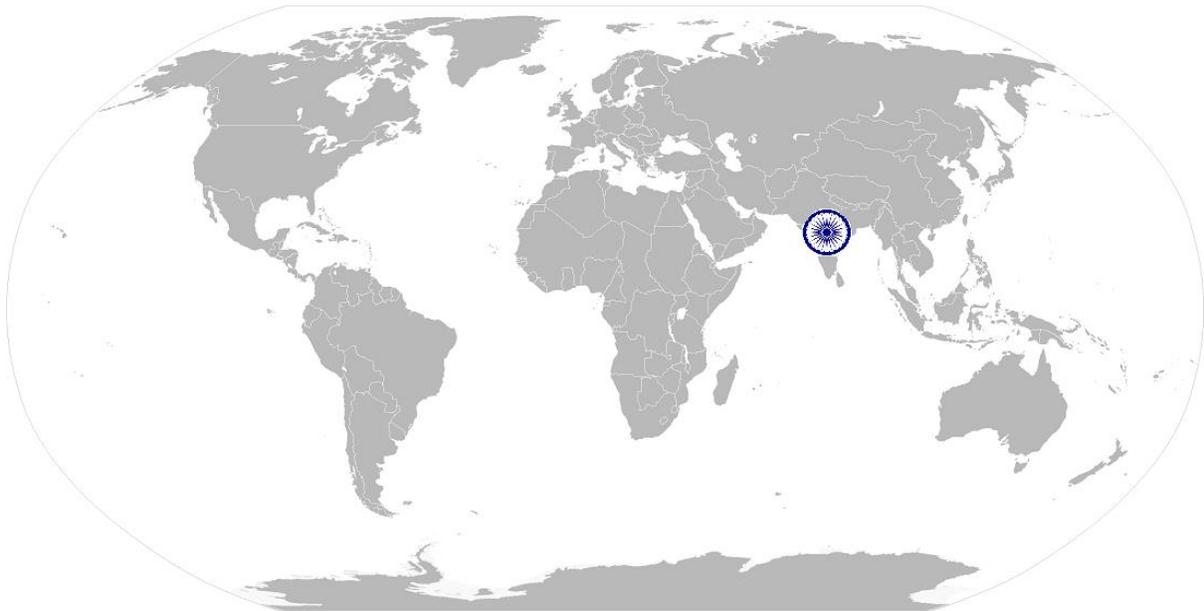
Respect and maintain IPR

NOS Version Control

NOS Code	G&J/N9901		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	29/05/13
Industry Sub-sector	Cast and Diamond-set Jewellery	Last reviewed on	30/07/13
		Next review date	15/06/15



National Occupational Standard



Overview

This unit is about team work and level of communication with colleagues or clients. It determines the ability to work as a team member, share work and multi-task in order to achieve the deliverables on schedule.

G&J/N9902

Coordinate with others

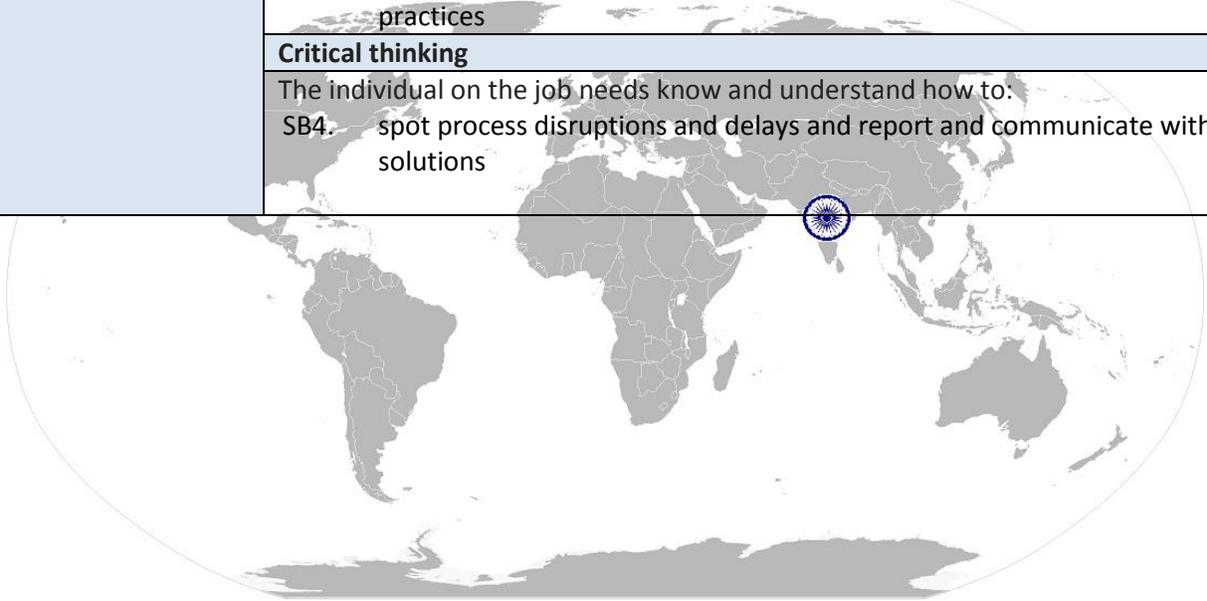
National Occupational Standard

Unit Code	G&J/N9902
Unit Title (Task)	Interact with colleagues and seniors
Description	This OS unit is about communicating with colleagues and seniors in order to achieve smooth and hazard-free work flow
Scope	<p>This unit/task covers the following:</p> <p>Interact with supervisor</p> <ul style="list-style-type: none"> • receive work instructions and raw materials from reporting supervisor • communicate to reporting supervisor about process-flow improvements, product defects received from previous process, repairs and maintenance of tools and machinery as required • communicate any potential hazards or expected process disruptions • handover completed work to supervisor <p>Interact with colleagues within and outside the department</p> <ul style="list-style-type: none"> • work as a team with colleagues and share work as per their or own work load and skills • work with colleagues of other departments • communicate and discuss work flow related difficulties in order to find solutions with mutual agreement • receive feedback from qc and rework in order to complete work on time
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Interaction with supervisor	To be competent, the user/individual on the job must be able to: PC1. understand the work output requirements PC2. comply with company policy and rule PC3. deliver quality work on time as required by reporting any anticipated reasons for delays
Interactions with colleagues and other departments	To be competent, the user/individual on the job must be able to: PC4. put team over individual goals PC5. be able to resolve conflicts PC6. learn how to multi-task relevant activities
Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. company's policies on: preferred language of communication, reporting and escalation policy, quality delivery standards, and personnel management KA2. reporting structure
B. Technical Knowledge	The user/individual on the job needs to know and understand how to: KB1. communicate effectively KB2. build team coordination

G&J/N9902

Coordinate with others

Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills
	The individual on the job needs to know and understand how to: SA1. read and write preferred language of communication as prescribed by the company SA2. read job sheets and interpret technical details mentioned in the job sheet
B. Professional Skills	Decision making
	The individual on the job needs to know and understand: SB1. how to spot and communicate potential areas of disruptions to work process and report the same SB2. when to report to supervisor and when to deal with a colleague individually, depending on the type of concern
	Reflective thinking
	The individual on the job needs to know and understand how to: SB3. improve work processes by interacting with others and adopting best practices
	Critical thinking
The individual on the job needs know and understand how to: SB4. spot process disruptions and delays and report and communicate with solutions	

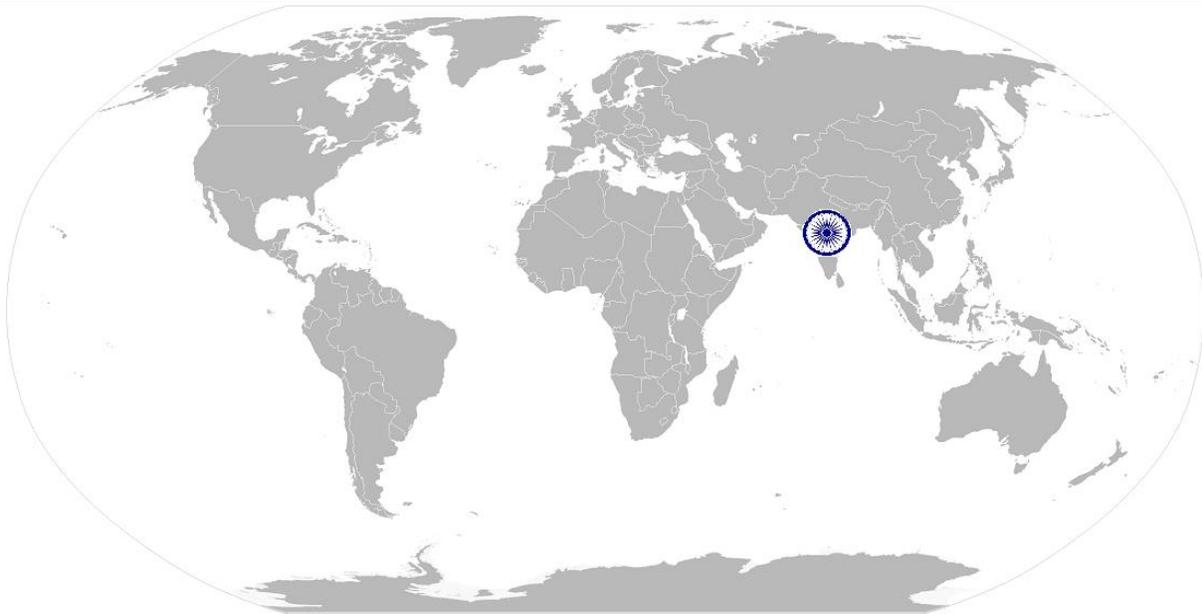


G&J/N9902

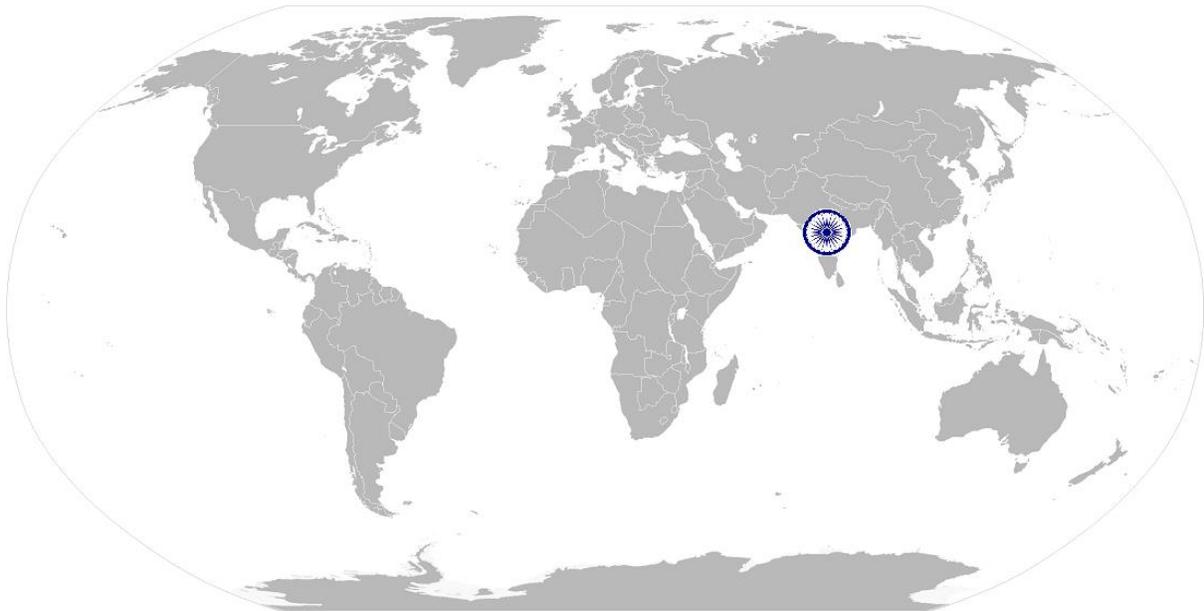
Coordinate with others

NOS Version Control

NOS Code	G&J/N9902		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	29/05/13
Industry Sub-sector	Cast and diamond-set jewellery	Last reviewed on	30/07/13
		Next review date	15/06/15



National Occupational Standard



Overview

This unit is about commitment towards reporting potential hazards, taking preventive measures to contain accidents in order to make the work environment safe for self and colleagues and maintaining occupational health and safety.

G&J/N9905

Maintain occupational health and safety

National Occupational Standard

Unit Code	G&J/N9905
Unit Title (Task)	Maintain occupational health and safety
Description	This OS unit is about being aware of, communicating and taking steps towards minimizing potential hazards and dangers of accidents on the job and maintaining occupational health and safety
Scope	<p>This unit/task covers the following:</p> <p>Understand potential sources of accidents</p> <ul style="list-style-type: none"> to avoid accidents related to use of potentially dangerous chemicals, sharp tools and machines <p>Use safety gear to avoid accidents</p> <ul style="list-style-type: none"> wear safety gear such as goggles, mask, gloves, ear plugs <p>Actively participate in the health and safety awareness campaigns</p> <ul style="list-style-type: none"> attend fire drills organised by the company or industrial zone learn first aid procedure be alert about designated assembly area in the event of an emergency read and understand the evacuation and emergency procedures <p>Communicate to reporting supervisor about:</p> <ul style="list-style-type: none"> process flow improvements that can reduce anticipated or repetitive hazards mishandling of tools, machines or hazardous materials electrical problems that could result in accident
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Communicating potential accident points	To be competent, the user/individual on the job must be able to: PC1. spot and report potential hazards on time PC2. follow company policy and rules regarding use of hazardous materials PC3. attend and actively participate in the health and safety campaigns organised by the company
Using safety gear	To be competent, the user/individual on the job must be able to: PC4. use or wear safety gear as per the rules of the company
Knowledge and Understanding (K)	
A. Organizational Context	The user/individual on the job needs to know and understand: KA1. company's policies on: safety and hazards and personnel management KA2. reporting structure
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. how different chemicals react and what could be the danger from them KB2. how to use machines and tools without suffering bodily harm

G&J/N9905

Maintain occupational health and safety

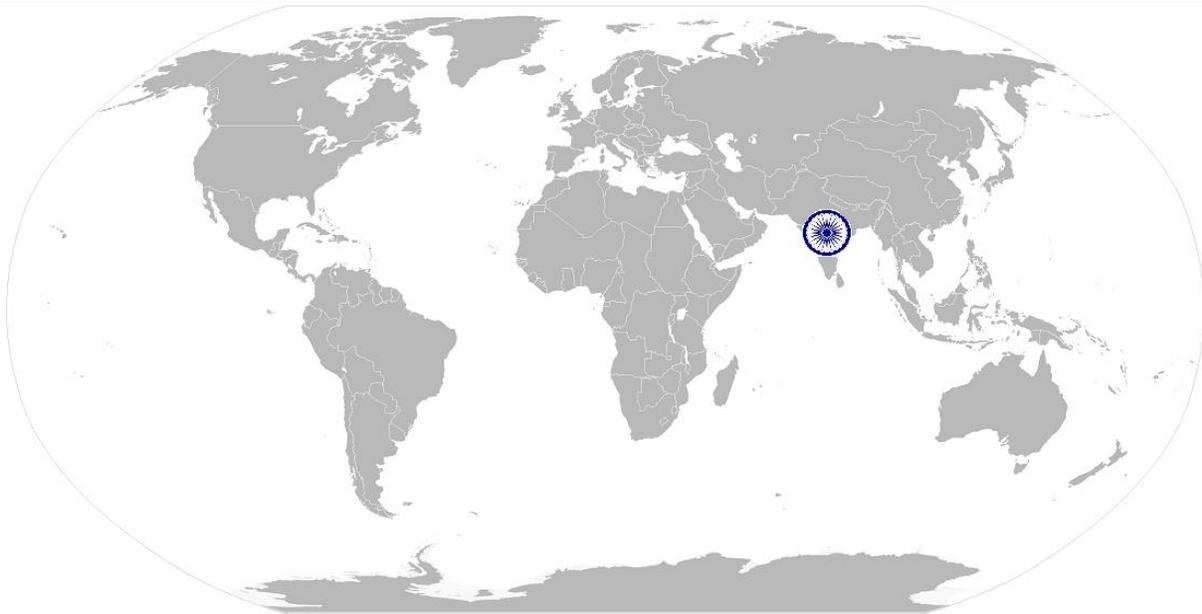
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills The individual on the job needs to know and understand how to: SA1. effectively communicate the danger
	Organising skills The individual on the job needs to know and understand how to: SA2. keep all the tools in an organised manner so as to avoid accidents SA3. keep the work environment safe and clean
	B. Professional Skills
	Decision making The individual on the job needs to know and understand how to: SB1. report potential sources of danger SB2. follow prescribed procedure in the event of an accident SB3. wear appropriate safety gear to avoid an accident
	Reflective thinking The individual on the job needs to know and understand to: SB4. learn from past mistakes regarding use of hazardous machines or chemicals
	Critical thinking The individual on the job needs to know and understand how to: SB5. spot danger
	Decision making The individual on the job needs to know and understand how to: SB6. report potential sources of danger SB7. follow prescribed procedure in the event of an accident SB8. wear appropriate safety gear to avoid an accident

G&J/N9905

Maintain occupational health and safety

NOS Version Control

NOS Code	G&J/N9905		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	29/05/13
Industry Sub-sector	Cast and diamond-set jewellery	Last reviewed on	30/07/13
		Next review date	15/06/15



Definitions

Keywords /Terms	Description
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.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-function	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
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 they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (OS)	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	Knowledge and understanding 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

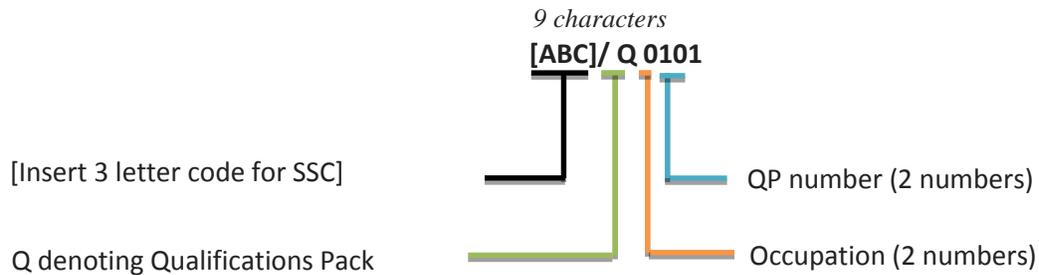
Acronyms

	specific designated responsibilities.
Core Skills/ Generic Skills	Core skills or generic skills 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.
Keywords /Terms	Description
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing
IPR	Intellectual Property Rights
NOS	National Occupational Standard(s)
NVQF	National Vocational Qualifications Framework
NSQF	National Qualifications Framework
NVEQF	National Vocational Education Qualifications Framework
QP	Qualifications Pack

Annexure

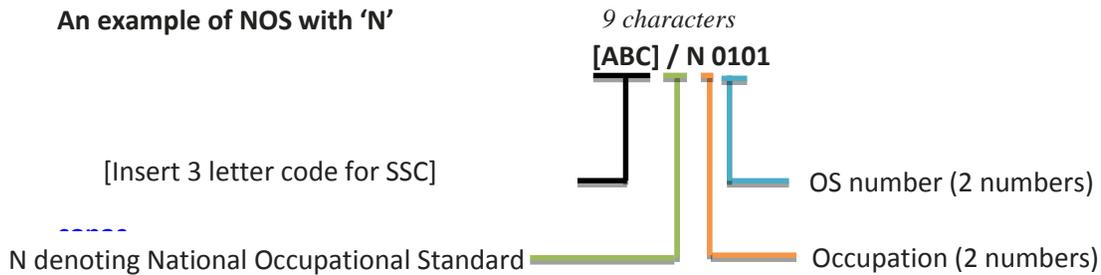
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



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The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Handmade gold and gems-set jewellery	01-20
Cast and diamond-set jewellery	21-40
Diamond processing	41-60
Gemstone processing	61-80
Jewellery retailing	81-98

Sequence	Description	Example
Three letters	Industry name	G&J
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: CAM Machine Operator
 Qualification Pack: CAM Machine Operator
 Sector Skill Council: Gems & Jewellery

To pass the Assessment, a candidate needs to score 50% in Theory and 70% in Practical

Assessment Strategy				Marks Allocation		
NOS	Elements	Performance Criteria	Total	Theory	Practical	
1. G&J/N2401 Produce resin-based jewellery prototype using milling	Producing resin based prototype using CAM machine	PC1. accurately set up and calibrated CAM machine	6	1	5	
		PC2. select appropriate cutting tools	6	1	5	
		PC3. select resin type, size and thickness according to jewellery design	5	1	4	
		PC4. accurately measure design dimensions (prong thickness, gap between diamonds)	5	1	4	
		PC5. prepare detailed note for the precision required at the manufacturing stage	3	0	3	
		PC6. inspect and report 3D design errors before CAM operation	4	1	3	
	Productivity	PC7. timely deliver resin based prototype/model for mass production of jewellery pieces	1	0	1	
		PC8. produce number of prototype/model as per target given	1	0	1	
	Quality of output	PC9. produce quality approved models as per the design and instructions given by merchandiser or designer	1	0	1	
		PC10. minimise productions disruptions because of model imperfections	1	0	1	
			33	5	28	
2. G&J/N2402 Use rapid prototyping technology	Producing resin based prototype using CAM machine	PC1. accurately set up and calibrated CAM machine	6	1	5	
		PC2. select appropriate cutting tools	6	1	5	
		PC3. select resin type, size and thickness according to jewellery design	5	1	4	
		PC4. accurately measure design dimensions (prong thickness, gap between diamonds)	5	1	4	
		PC5. prepare detailed note for the precision required at the manufacturing stage	3	0	3	
		PC6. inspect and report 3D design errors before CAM	3	0	3	

		operation			
		PC7. upload file correctly	2	0	2
		PC8. calibrate accurately for minimum vibration	3	0	3
		PC9. clean the prototype properly	2	0	2
	Productivity	PC10. timely deliver resin based prototype/model for mass production of jewellery pieces	1	0	1
		PC11. produce number of prototype/model as per target given	1	0	1
	Quality of output	PC12. produce quality approved models as per the design and instructions given by merchandiser or designer	1	0	1
		PC13. minimise productions disruptions because of model imperfections	1	0	1
		PC14. ensure that multiple pieces on the prototype platform do not touch one another	1	0	1
			40	4	36
3. G&J/N9901 Respect and maintain IPR	Respecting and Maintaining IPR	PC1. be able to spot plagiarism and report	1	1	0
		PC2. be aware of patents and IPR	1	1	0
		PC3. not be involved in IPR violations	1	1	0
			3	3	0
4. G&J/N9902 Coordinate with others	Interaction with supervisor	PC1. understand the work output requirements	4	0	4
		PC2. comply with company policy and rule	1	1	0
		PC3. deliver quality work on time as required by reporting any anticipated reasons for delays	4	0	4
	Interactions with colleagues and other departments	PC4. put team over individual goals	1	1	0
		PC5. be able to resolve conflicts	1	1	0
		PC6. learn how to multi-task relevant activities	1	1	0
			12	4	8
5. G&J/N9905 Maintain occupational health and safety	Communicating potential accident points	PC1. spot and report potential hazards on time	1	1	0
		PC2. follow company policy and rules regarding use of hazardous materials	5	1	4
		PC3. attend and actively participate in the health and safety campaigns organised by the company	1	1	0
	Using safety gear	PC4. use or wear safety gear as per the rules of the company	5	1	4
			12	4	8
		Total		20	80
		Grand Total		100	



Qualifications Pack for CAM machine operator

