

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR GEMS & JEWELLERY INDUSTRY

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 – Laser machine Operator

SECTOR: GEMS & JEWELLERY

SUB-SECTOR: Cast and Diamonds-Set Jewellery

OCCUPATION: Machine Jewellery Making

REFERENCE ID: G&J/Q3303

ALIGNED TO: NCO-2004/NIL

Laser Machine Operator: A Laser Machine Operator is also known as ‘Laser Welder’ in the Indian jewellery making industry. This role in the cast and diamond-set jewellery manufacturing is evolving as customers prefer high precision in the jewellery products.

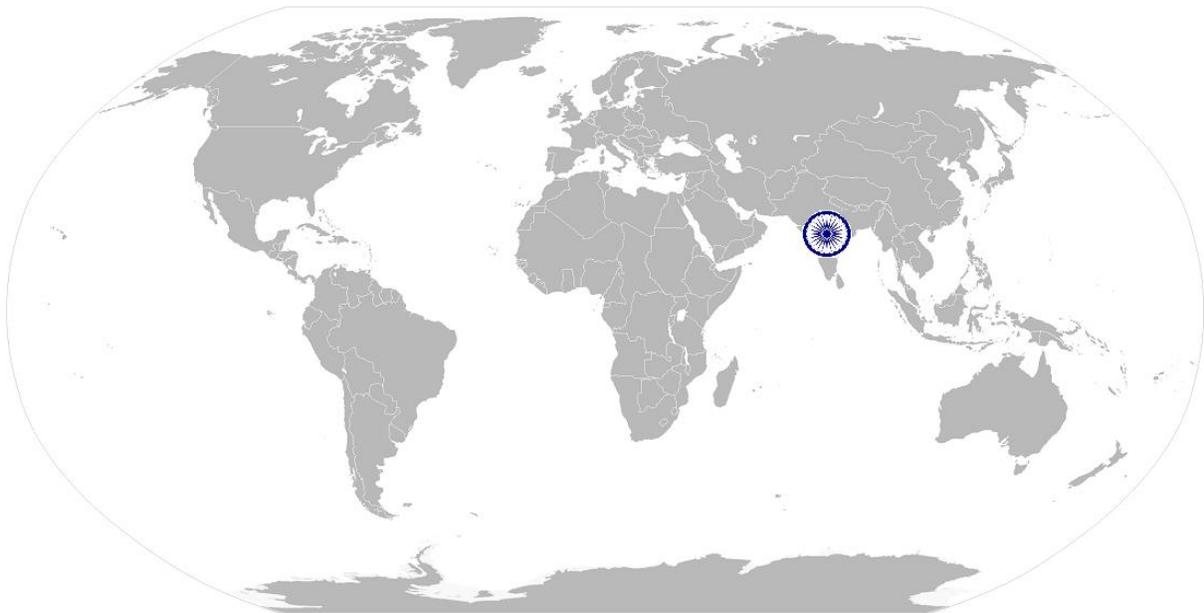
Brief Job Description: The individual at work rectifies casting defects (such as porosity), joining two metal parts, and broken prongs, resize rings, earring post, pendant loop, etc. with high precision using Laser machine. The individual uses microscope to align and weld the component part or assembly at the precise location.

Personal Attributes: The job requires the individual to have: attention to details, hand-eye coordination, highest level of quality and precision while working with jewellery components. A Laser machine operator is expected to have integrity in dealing with high value jewellery.

Qualifications Pack Code	G&J/Q3303		
Job Role	Laser machine operator		
Credits(NSQF)	TBD	Version number	1.0
Sector	Gems & Jewellery	Drafted on	29/05/13
Sub-sector	Cast and Diamond-set Jewellery	Last reviewed on	13/08/14
Occupation	Machine Jewellery Making	Next review date	12/08/15

Job Role	Laser machine operator Also called as 'Laser Welder'
Role Description	This unit is about rectifying jewellery product defects such as porosity, broken prongs, excess metal by laser machine
NSQF level	4
Minimum Educational Qualifications	Preferably 10 th Standard passed
Maximum Educational Qualifications	
Training	Not applicable
Experience	Not applicable
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> G&J/N3303 Operate laser machine in jewellery manufacturing 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 rectifying jewellery product defects such as porosity, broken prongs, excess metal, etc. by laser machine. Laser welding technology is growing very fast as an alternative to traditional solder torch practices used in cast and diamond-set jewellery manufacturing.

G&J/N3303 Operate the laser machine laser machine in jewellery manufacturing

National Occupational Standard

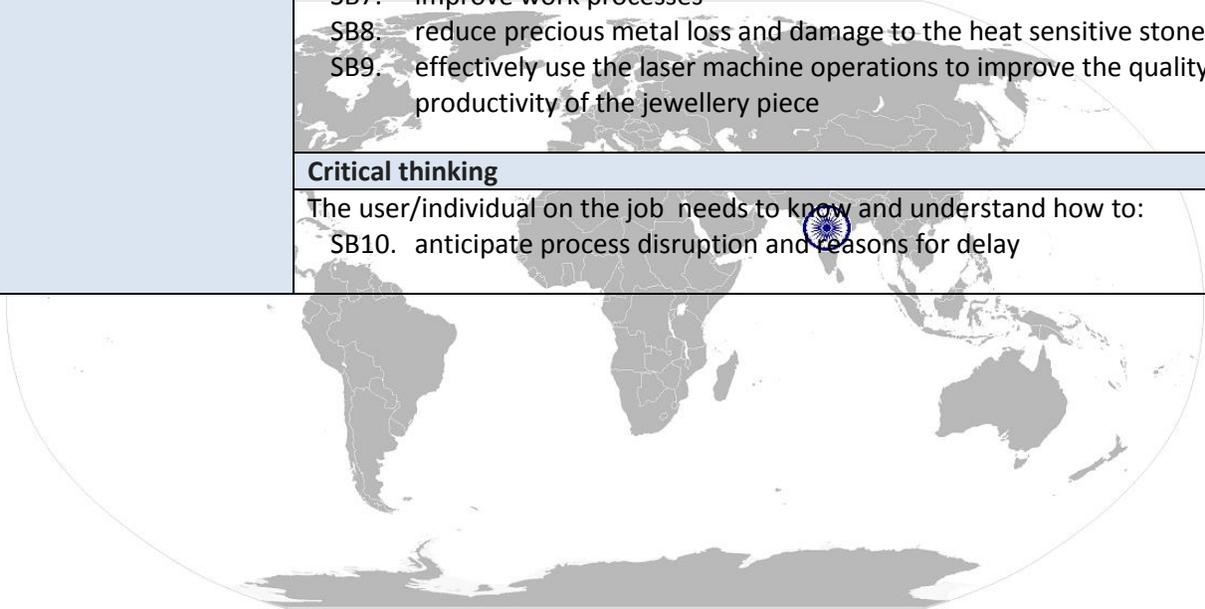
Unit Code	G&J/N3303
Unit Title (Task)	Operate the laser machine
Description	This OS unit is about rectifying jewellery product defects such as porosity, broken prongs, excess metal, etc., by using laser machine
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Collect jewellery pieces and additional metal • Rectify defects in the jewellery pieces by laser machine • Control gold loss and damage to stones • Detect product defects and check quality • Report problems related to machine, shortage of consumables and anticipated delays that may adversely affect delivery
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Rectifying defective jewellery piece	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. collect jewellery pieces and inspect for any imperfections or defects such as porosity, broken prongs, excess metal, etc.</p> <p>PC2. weigh the jewellery pieces</p> <p>PC3. collect precious metal from stores required for filling porosity or adding to jewellery pieces</p> <p>PC4. assess the extent and type of defect in the jewellery piece</p> <p>PC5. accurately compute metal required for rectifying defects such as filling porosity</p> <p>PC6. identify the type of defect in the jewellery piece</p> <p>PC7. view the jewellery piece under microscope and assess the extent and type of defect in the jewellery piece</p> <p>PC8. control the laser machine parameters beam diameter (weld spot), power level (voltage), and pulse length depending on the type of alloy and joint being welded</p> <p>PC9. use microscope mounted on laser machine to align and weld the component part or assembly at the precise location</p> <p>PC10. activate the laser pulse by foot pedal and weld the jewellery pieces at the defective areas as per the job sheet</p> <p>PC11. ensure minimal accidents while handling laser machine</p>
Controlling gold loss and achieving productivity	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC12. collect precious metal particles from machine</p> <p>PC13. tally account as per specified standards</p> <p>PC14. conduct regular and controlled environment cleaning for collection</p> <p>PC15. maintain the proportion of re-use of gold and new as per company standards</p> <p>PC16. minimise damage to heat sensitive stones</p> <p>PC17. align and weld the component part or assembly at the precise location</p> <p>PC18. optimise utilisation of laser machine</p>

G&J/N3303 Operate the laser machine laser machine in jewellery manufacturing

	<p>PC19. minimise rework, precious metal loss and damage to heat sensitive stones in the laser machine operation</p> <p>PC20. timely deliver jewellery pieces to next process</p> <p>PC21. rectify number of jewellery pieces as per target deliverable and quality approved by the supervisor</p>
Checking quality	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC22. inform supervisor if product has defects such as porosity, blisters, bubbles, cracks, etc. which cannot be seamlessly repaired by laser machine</p> <p>PC23. understand the type of defect, assess if filing and polishing unit can give finishing required as per job sheet or rework is required</p> <p>PC24. produce defect-free jewellery pieces</p> <p>PC25. rework on the product returned from QC</p> <p>PC26. check weight and size as per design</p> <p>PC27. ensure minimum damage to the set stones during laser machine operation</p> <p>PC28. produce Quality Control approved jewellery piece</p>
Knowledge and Understanding (K)	
A. Organizational Context	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on: acceptable limits of gold and other precious metal loss, quality, delivery timelines, safety and hazards, integrity and IPR, personnel management and dress code</p> <p>KA2. importance of the individual's role in the workflow</p> <p>KA3. reporting structure</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. uses of laser machine operations in order to rectify various kinds of defects such as porosity, excess metal, and broken prongs, resize rings, etc. in jewellery casting process</p> <p>KB2. potential work hazards while handling laser machine</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Basic reading and writing skills
	The user/ individual on the job needs to know and understand how to:
	SA1. read notes, designs and instructions on job sheet
	SA2. read company rules and compliance documents required to complete the work
	Calculation skills
The user/individual on the job needs to know and understand how to:	
SA3. weigh the jewellery pieces	
SA4. assess gold loss during the laser machine operations so as to deliver jewellery pieces of required weight	
Teamwork and multitasking	
The user/individual on the job needs to know and understand how to:	
SA5. share work load as required	
SA6. receive feedback from supervisor	

G&J/N3303 Operate the laser machine laser machine in jewellery manufacturing

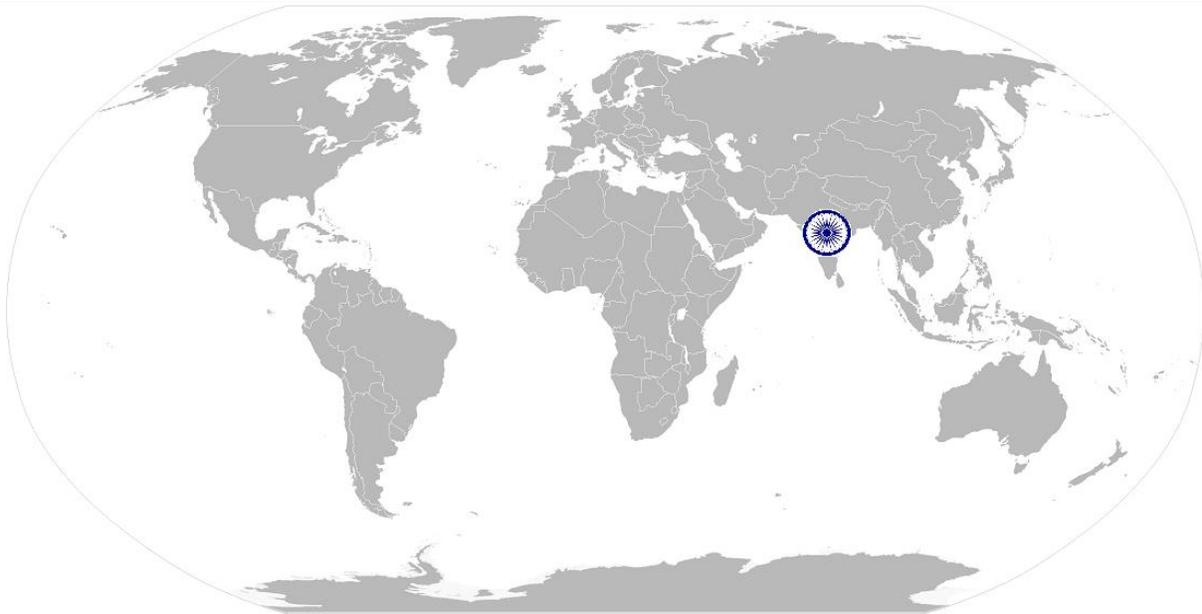
B. Professional Skills	Reading design
	The user/individual on the job needs to know and understand: SB1. the steps involved in casting jewellery as per design
	Use of tools and machines
	The user/individual on the job needs to know and understand how to: SB2. use of laser machine SB3. work in a safe environment, i.e., without injuries SB4. organise workspace and documents required for the job
	Reflective thinking
	The user/individual on the job needs to know and understand how to: SB5. give inputs to rectify the defects in jewellery pieces SB6. use correct posture for performing the job without injuring body parts SB7. improve work processes SB8. reduce precious metal loss and damage to the heat sensitive stones SB9. effectively use the laser machine operations to improve the quality and productivity of the jewellery piece
Critical thinking	
The user/individual on the job needs to know and understand how to: SB10. anticipate process disruption and reasons for delay	



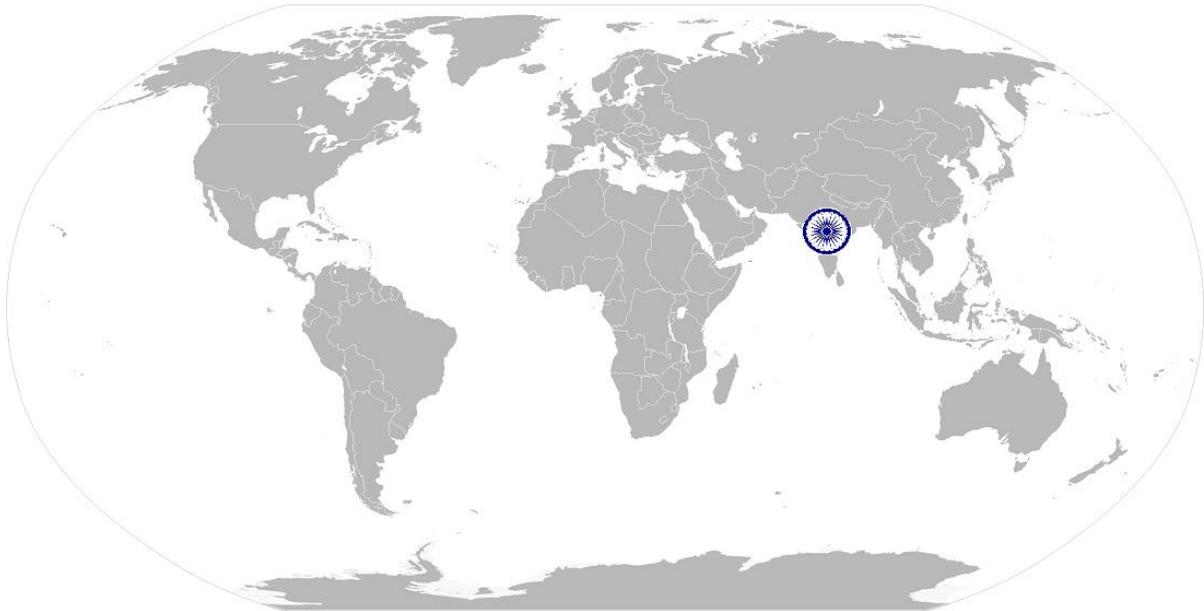
G&J/N3303 Operate the laser machine laser machine in jewellery manufacturing

NOS Version Control

NOS Code	G&J/N3301		
Credits(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	13/08/14
Occupation	Machine Jewellery Making	Next review date	12/08/15



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

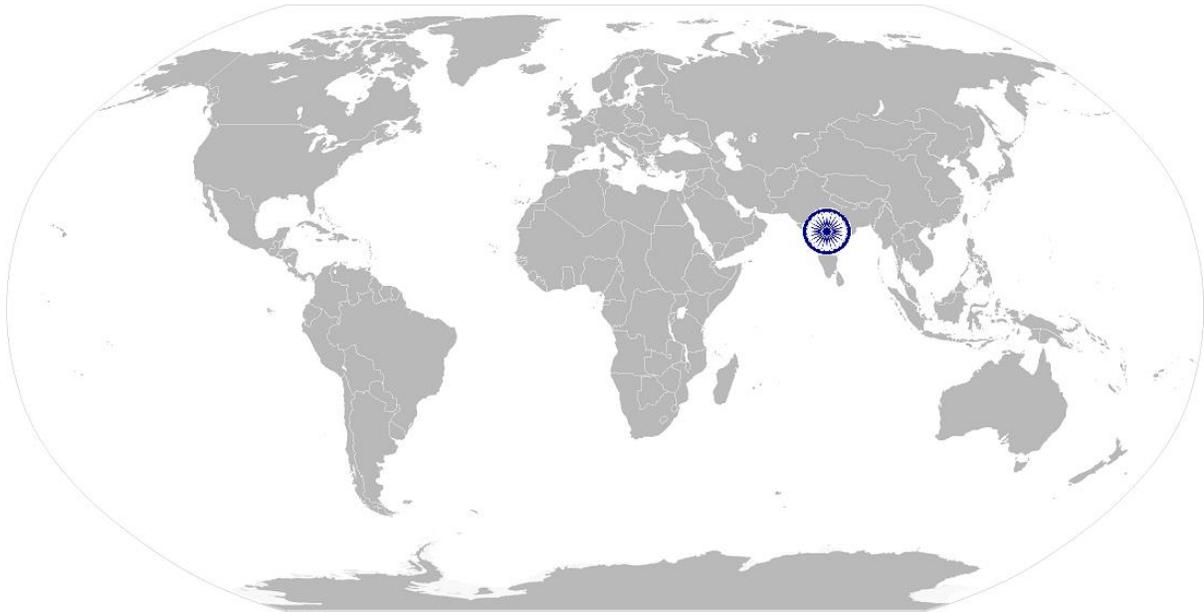
National Occupational Standard

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> <ul style="list-style-type: none"> Protect company's Intellectual Property Rights (IPR) Avoid infringement to IPR of other companies
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Respecting and Maintaining IPR	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. prevent leak of new designs to competitors by reporting on time</p> <p>PC2. be aware of any of company's product or design patents</p> <p>PC3. report IPR violations observed in the market, to supervisor or company heads</p> <p>PC4. read copyright clause of the material published on the internet and any other printed material</p> <p>PC5. consult supervisor or senior management when in doubt about using publicly available information</p> <p>PC6. report any infringement observed in the company</p> <p>PC7. spot plagiarism and report</p> <p>PC8. understand significance of patents and IPR</p> <p>PC9. avoid being involved in IPR violations</p>
Knowledge and Understanding (K)	
C. Organizational Context	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on IPR and plagiarism</p> <p>KA2. reporting structure</p> <p>KA3. company's unique product range</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. patents and IPR laws</p> <p>KB2. how IPR protection is important for competitiveness of a company</p>
Skills (S) [Optional]	
C. Core Skills/ Generic Skills	Communication skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. effectively communicate any observed IPR violations or order leaks</p>
D. Professional Skills	Decision making
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. report potential sources of violations</p>

G&J/N9901

Respect and maintain IPR

	Reflective thinking
	The user/individual on the job needs to know and understand to: SA2. 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: SA3. spot signs of violations and alert authorities in time

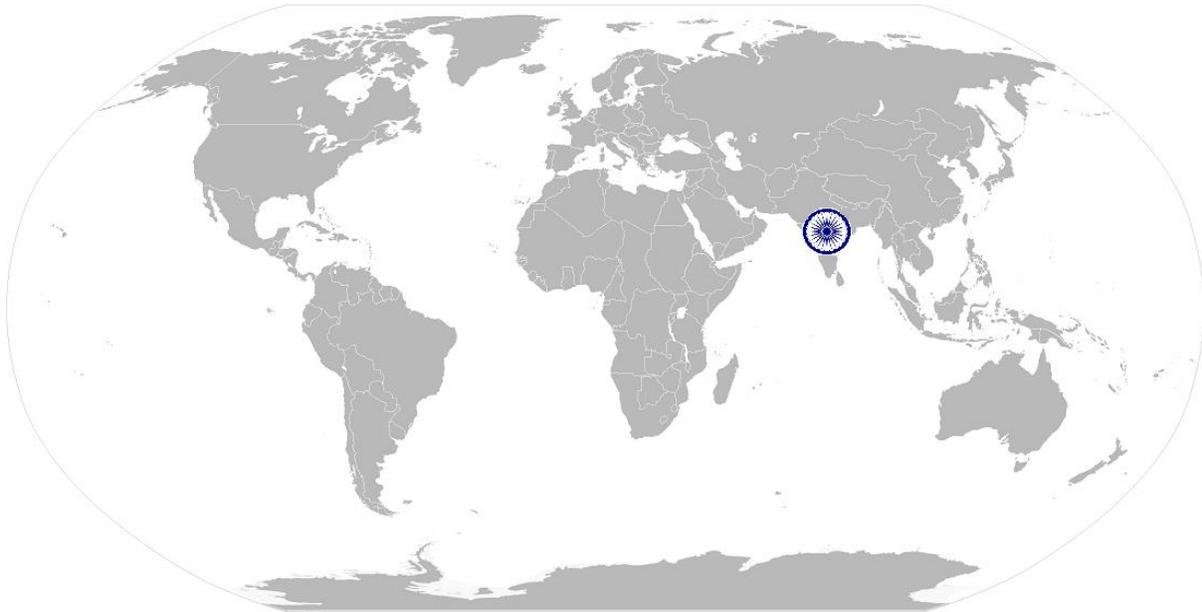


G&J/N9901

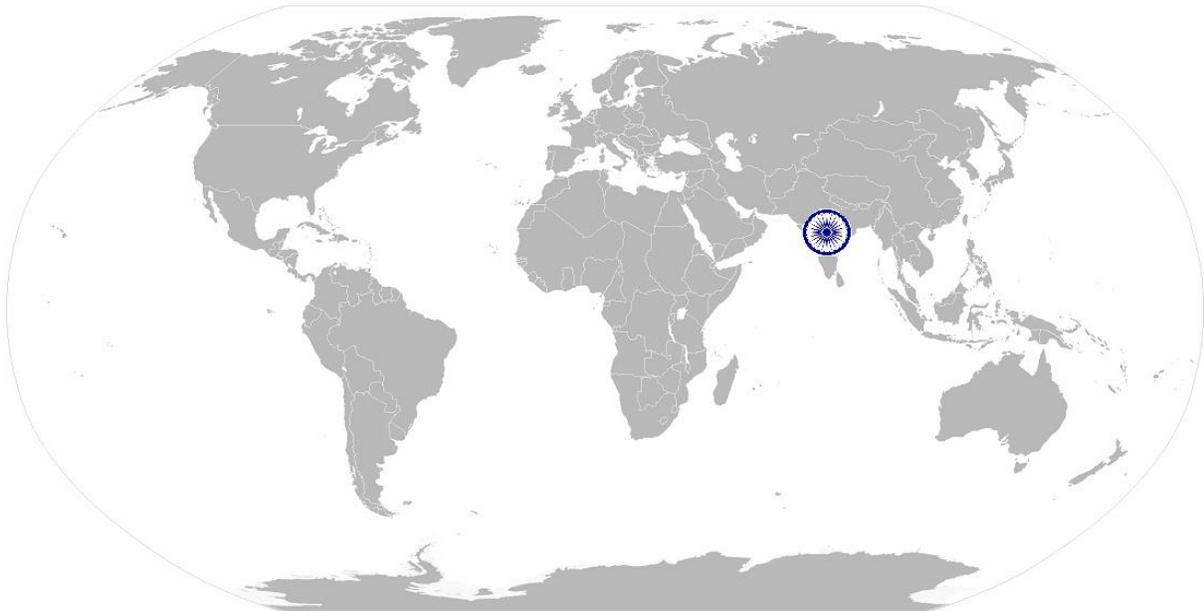
Respect and maintain IPR

NOS Version Control

NOS Code	G&J/N9901		
Credits(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	13/08/14
		Next review date	12/08/15



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

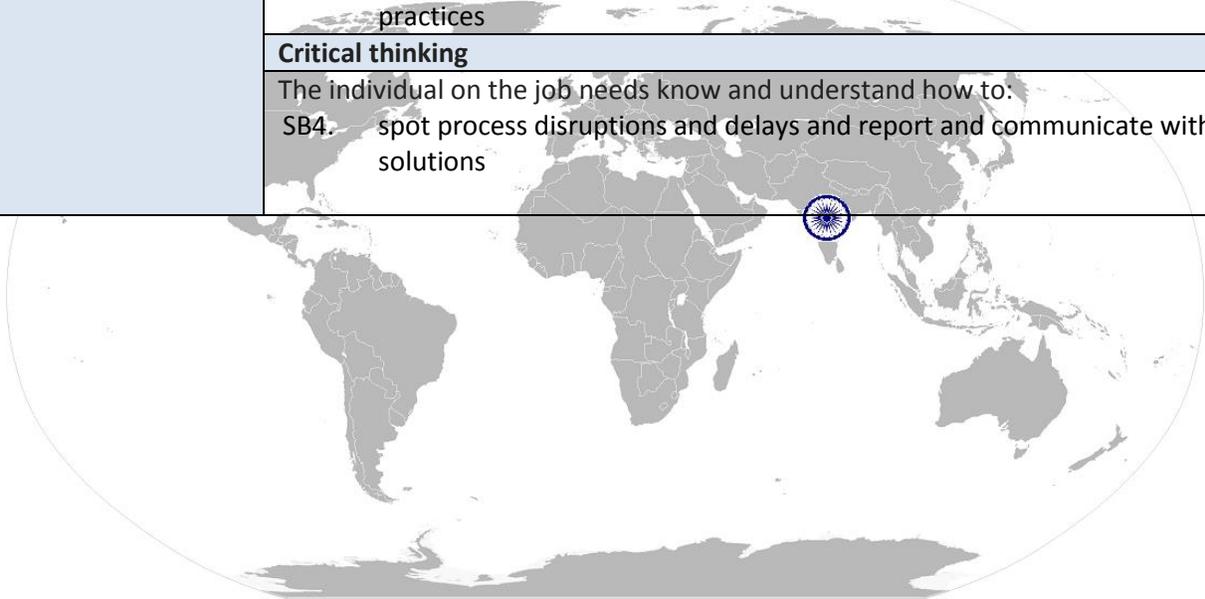
National Occupational Standard

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	This unit/task covers the following: <ul style="list-style-type: none"> • Interact with supervisor • Interact with colleagues within and outside the department
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: <ul style="list-style-type: none"> PC1. receive work instructions and raw materials from reporting supervisor PC2. communicate to reporting supervisor about process-flow improvements, product defects received from previous process, repairs and maintenance of tools and machinery as required PC3. communicate any potential hazards or expected process disruptions PC4. handover completed work to supervisor PC5. understand the work output requirements PC6. comply with company policy and rule PC7. 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: <ul style="list-style-type: none"> PC8. work as a team with colleagues and share work as per their or own work load and skills PC9. work with colleagues of other departments PC10. communicate and discuss work flow related difficulties in order to find solutions with mutual agreement PC11. receive feedback from qc and rework in order to complete work on time PC12. put team over individual goals PC13. be able to resolve conflicts PC14. 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 jobsheet
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	

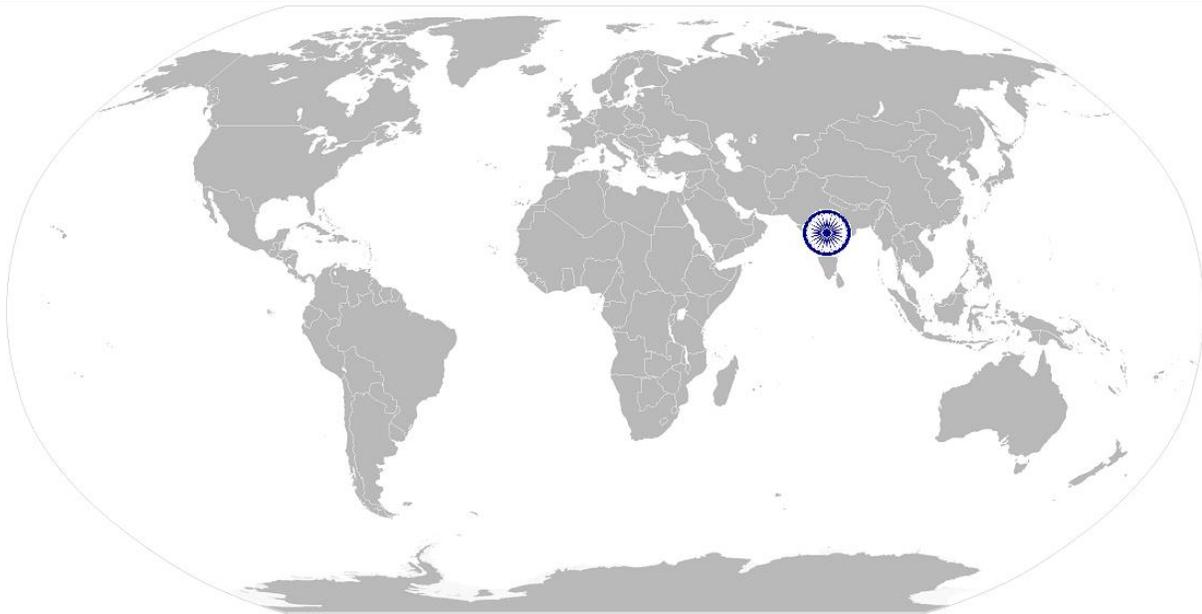


G&J/N9902

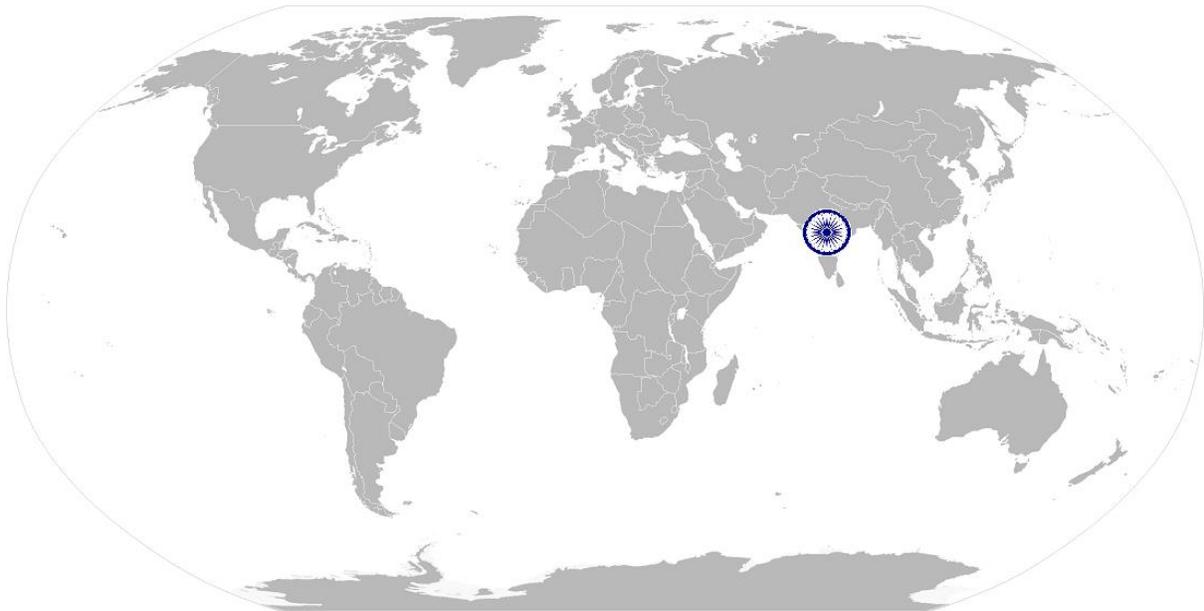
Coordinate with others

NOS Version Control

NOS Code	G&J/N9902		
Credits(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	13/08/14
		Next review date	12/08/15



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> <ul style="list-style-type: none"> • Understand potential sources of accidents • Use safety gear to avoid accidents • Actively participate in the health and safety awareness campaigns • Communicate to reporting supervisor about:
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Communicating potential accident points	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. understand potential sources of accidents in order to avoid accidents related to use of potentially dangerous chemicals, sharp tools, hazards from machines and other equipment such as heating lamps</p> <p>PC2. spot and report potential hazards on time</p> <p>PC3. follow company policy and rules regarding use of hazardous materials</p> <p>PC4. attend and actively participate in the health and safety campaigns organised by the company</p> <p>PC5. Process flow improvements that can reduce anticipated or repetitive hazards</p> <p>PC6. Mishandling of tools, machines or hazardous materials</p> <p>PC7. Electrical problems that could result in accident</p>
Using safety gear	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. use or wear safety gear as per the rules of the company</p> <p>PC9. attend fire drills organised by the company or industrial zone</p> <p>PC10. learn first aid procedure</p> <p>PC11. be alert about designated assembly area in the event of an emergency</p> <p>PC12. read and understand the evacuation and emergency procedures</p>
Knowledge and Understanding (K)	
A. Organizational Context	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on: safety and hazards and personnel management</p> <p>KA2. reporting structure</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. how different chemicals react and what could be the danger from them</p> <p>KB2. how to use machines and tools without suffering bodily harm</p>

G&J/N9905

Maintain occupational health and safety

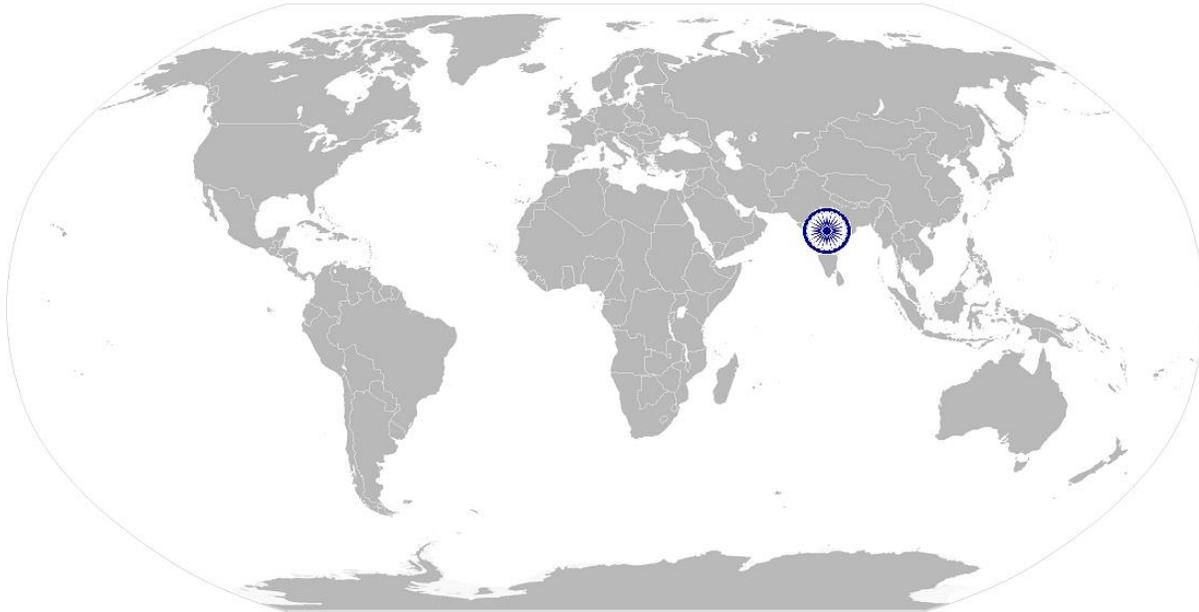
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills The individual on the job needs to know and understand how to: SA1. effectively communicate the danger
	Organising skills The individual on the job needs to know and understand how to: SA2. keep all the tools in an organised manner 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 dangers
	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(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	13/08/14
		Next review date	12/08/15



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

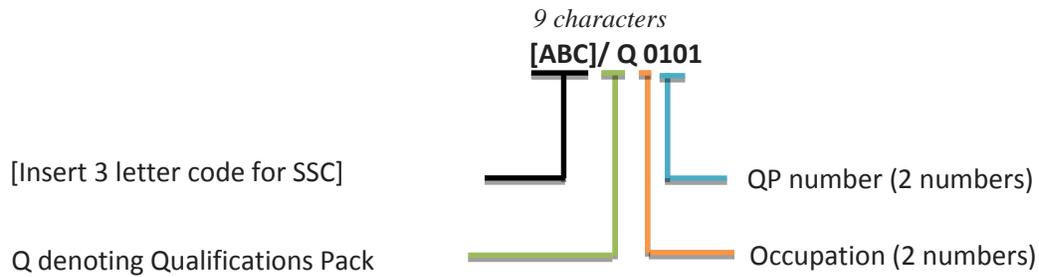
Acronyms

	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

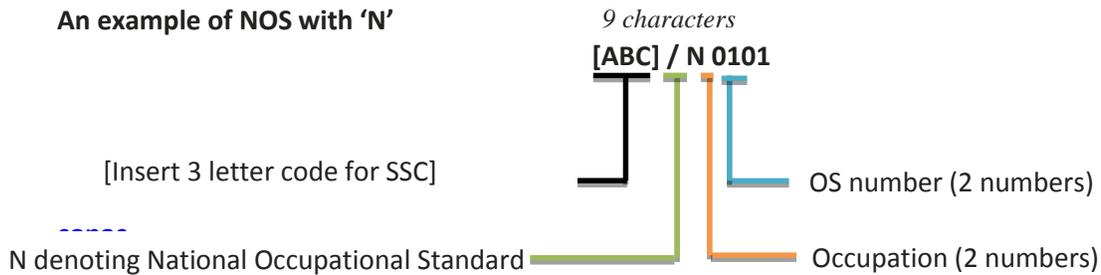
Nomenclature for QP and NOS

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

<u>CRITERIA FOR ASSESSMENT OF TRAINEES</u>					
Job Role		Laser Machine Jewellery Operator			
Qualification Pack		Laser Machine Jewellery 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	Theory	Practical	
G&J/N3303 Operate laser machine in jewellery manufacturing set up	Rectify the defective jewellery pieces	PC1. assess the extent and type of defect in the jewellery piece	2	12	
		PC2. accurately compute alloy required for rectifying defects such as filling porosity	2	10	
		PC3. ensure minimal accidents while handling laser machine	2	10	
	Productivity	PC4. align and weld the component part or assembly at the precise location	2	6	
		PC5. optimise utilisation of laser machine	1	6	
		PC6. minimise rework, precious metal loss and damage to heat sensitive stones in the laser machine operation	1	6	
		PC7. timely deliver jewellery pieces to next process	0	6	
	Quality & Output	PC8. rectify number of jewellery pieces as per target deliverable and quality approved by the supervisor	0	4	
		PC9. produce defect-free jewellery pieces	0	4	
		PC10. ensure minimum damage to the set stones during laser machine operation	0	4	
			PC11. produce Quality Control approved jewellery piece	0	2
		Sub Total	10	70	
2. G&J/N9901 Respect & Maintain IPR	Respecting & Maintaining IPR	PC1. be able to spot plagiarism and report	1	0	
		PC2. be aware of patents and IPR	1	0	
		PC3. not be involved in IPR violations	1	0	
			Sub Total	3	0
3. G&J/N9902 Coordinate with team and others	Interaction with superior	PC1. understand the work output requirements	1	2	
		PC2. comply with company policy and rule	1	2	
		PC3. deliver quality work on time as required by reporting any anticipated reasons for delays	1	1	

		<u>CRITERIA FOR ASSESSMENT OF TRAINEES</u>		
	Interactions with colleagues, customers and/or vendors	PC4. put team over individual goals	1	1
		PC5. resolve conflicts and multi-task	1	1
		PC6. follow company policy and rules regarding use of hazardous materials	0	0
		Sub Total	5	7
4. G&J/N9905 Maintain occupational health and safety	Communicating potential accident points	PC1. spot and report potential hazards on time	1	1
		PC2. follow company policy and rules regarding use of hazardous materials	1	1
		PC3. deliver quality work on time as required by reporting any anticipated reasons for delays	0	0
	Using safety gear	PC4. use or wear safety gear as per the rules of the company	0	1
		Sub Total	2	3
		Total	20	80

