SURGICAL INSTRUMENTS MANUFACTURING TECHNICIAN

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COMPETENCY STANDARDS
National Vocational Certificate Level 2-4

Version 1 - June, 2019

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INTRODUCTION

A Surgical Instrument Manufacturing Technician is a craftsman who specializes in the manufacturing of surgical instruments. This person is competent in developing surgical instruments from sheet / forged metal material. This person is also able to read technical drawings, prepare components and parts of surgical instruments, and polish, grind, heat treat, assemble and pack the surgical instruments. The Surgical Instrument Manufacturing Technician ensures quality of products, supervises production staff and is able to plan and structure the work process according to the technical requirements and the company structure. The Surgical Instrument Manufacturing Technician follows the relevant technical regulations and standards of the trade as well as health and safety regulations. Their work is always guided by environmental and economic aspects.

The job of a Surgical Instrument Manufacturing Technician suits individuals who have aptitude of working with metal, have a sense of quality and delicacy of surgical instruments and have tendency of working in a planned and organized way.The Surgical Instrument Manufacturing Technician is hired by surgical instruments manufacturers. The surgical instruments manufacturing sector comprises of approximately 3600 industrial units. The sector is dominated by 30 major integrated units having complete indigenous range of processes. An estimated 150 medium sized units are operational which outsource many operations to the 3000+ small industrial units.

National Vocational & Technical Training Commission (NAVTTC) has developed competency standards for Surgical Instrument Manufacturing Technician under National Vocational Qualifications Framework (NVQF). These competency standards have been developed by a Qualifications Development Committee (QDC) and validated by the Qualifications Validation Committee (QVC) having representation from the leading Garments and Gloves manufacturing companies of the country.

PURPOSE OF THE QUALIFICATION

The purpose of these qualifications is to set high professional standards for surgicalindustry. The specific objectives of developing these qualifications are as under:

- Improve the professional competence of the workforce
- Provide opportunities for recognition of skills attained through non-formal or informal pathways
- Improve the quality and effectiveness of training and assessment for surgical instruments sector
- Enable the existing workforce to capacitate themselves in new technologies and process methods.

DATE OF VALIDATION

25 - 26 June, 2019

CODE OF QUALIFICATION

The International Standard Classification of Education (ISCED) is a framework for assembling, compiling and analysing cross-nationally comparable statistics on education and training. ISCED codes for these qualifications are assigned as follows;

QUALIFICATION TITLE	CODE
National Vocational Certificate Level-2 in Surgical Instrument Manufacturing Technician (Instrument Maker)	**0722MSI003**
National Vocational Certificate Level-3 in Surgical Instrument Manufacturing Technician (Surgical Forger)	**0722MSI004**
National Vocational Certificate Level-4 in Surgical Instrument Manufacturing Technician (Supervisor)	**0722MSI005**

ENTRY REQUIREMENTS

The entry for National Vocational Certificate levels-II to Level-IV Surgical Instrument ManufacturingTechnician is given below**:**

QUALIFICATION TITLE	ENTRY REQUIREMENTS
National Vocational Certificate Level-II in Surgical Instrument Manufacturing Technician (Instrument Maker)	The entry requirement for this qualification is 8th Grade or equivalent
National Vocational Certificate Level-III in Surgical Instrument Manufacturing Technician (Surgical Forger)	The entry requirement for this qualification is National Vocational Certificate Level-II or Middle with hands on experience
National Vocational Certificate Level-IV in Surgical Instrument Manufacturing Technician (Supervisor)	The entry requirement for this qualification is National Vocational Certificates is Level-III or G-III or Middle with one year work experience

QUALIFICATIONS DEVELOPMENT COMMITTEE

The Qualifications Development Committee consisted of following members:

Sr. No.	NAME	DESIGNATION & ORGANIZATION
1.	Mr. AmjadMehmood Baloch	DACUM Facilitator, P-TEVTA
2.	Mr. FaizanulHaq	CEO,Suddle Group
3.	Mr. Zeshan Tariq	SVC SIMAP
4.	Mr. Aqil Haleem	Instructor, Foundation Institute of Technology
5.	Mr. Muhammad AdilNaseem	Principal, VTI Kasur
6.	Mr. Syed Muhammad Yasir Ali	Instructor, Foundation Institute of Technology
7.	Mr. Fazal Ur Rehman	CEO,Fazal Engineering Works
8.	Mr. Muhammad Kashif Shah	QA Inspector, Ekal Surgical
9.	Mr. NaqiHaider	Lecturer, GJMPI Karachi
10.	Mr. Salman Sameer	Course Coordinator, MIDC
11.	Mr. RustamHanif	Marketing Manager, Rising HopeEnterprises
12.	Mr. Ali Imran	Forging Incharge,Rising HopeEnterprises
13.	Mr. AbubakarMahtab	CEO, Plastic Craft, Gujranwala
14.	Mr. Salman Butt	Facilitator, CBT Expert

QUALIFICATIONS VALIDATION COMMITTEE

The Qualifications Validation Committee consisted of following members:

Sr. No.	Name	Designation / Occupation	Industry / Organization
1.	Mr. AmjadMehmood Baloch	DACUM Facilitator	PTEVTA
2.	Mr. FaizanulHaq	CEO	Suddle Group of Industries
3.	Mr. Sameer Ahmad	MIDC-IST	PTEVTA
4.	Mr. Muhammad AdilNaseem	Principal	VTI (PVTC) Kasur
5.	Mr. Syed Muhammad Yasir Ali	Instructor	Foundation Institute of Technology
6.	Mr. Muhammad Kashif Zeb	Production Engineer	Frigz Medical Instrument
7.	Mr. Muhammad Kashif Shah	QA Inspector	Ekal Surgical
8.	Mr. Imtinan Mirza	Production Manager	TU International
9.	Mr. RustamHanif	Marketing Manager	Rising Hope enterprises
10.	Mr. Ali Imran	Forging Incharge	Rising Hope enterprises
11.	Mr. AbubakarMahtab	CEO	Plastic Craft
12.	Mr. Syed Salman Nasir Ali Shah	Deputy Manager, Curriculum	PTEVTA
13.	Mr. AtifAnees	PC, Punjab	GFA, CBT&A

REGULATIONS FOR THE QUALIFICATION AND SCHEDULE OF UNITS

Not Applicable

CATEGORIZATION AND LEVELLING OF THE COMPETENCY STANDARDS

Code	Competency Standards	Level	Credits	Category
102200844	Comply Personal Health and Safety Guidelines	2	3	Generic
041700839	Communicate the Workplace Policy and Procedure	2	2	Generic
001100851	Perform Basic Communication (Specific)	2	3	Generic
061100856	Perform Basic Computer Application (Specific)	2	4	Generic
072200879	Perform Polishing	2	28	Technical
072200880	Perform Grinding	2	11	Technical
072200881	Assemble Surgical Instruments	2	10	Technical
072200882	Perform Packing	2	14	Technical
102200846	Apply Work Health and Safety Practices (WHS)	3	3	Generic
041700840	Identify and Implement Workplace Policy and Procedures	3	2	Generic
001100852	Communicate at Workplace	3	3	Generic
061100858	Perform Computer Application Skills	3	4	Generic
041300867	Manage Personal Finances	3	3	Generic
072200883	Perform Forging	3	21	Technical
072200884	Perform Manual Machining	3	21	Technical
072200885	Develop Sheet Metal Surgical Instruments	3	21	Technical
072200886	Apply Heat Treatment	3	25	Technical
102200848	Contribute to Work Related Health and Safety (WHS) Initiatives	4	3	Generic

041700841	Analysis Workplace Policy and Procedures	4	3	Generic
001100853	Perform Advanced Communication	4	3	Generic
061100858	Develop Advance Computer Application Skills	4	4	Generic
041300869	Manage Human Resource Services	4	2	Generic
041300860	Develop Entrepreneurial Skills	4	3	Generic
072200887	Ensure Quality of Products	4	20	Functional
072200888	Supervise Production Process	4	28	Functional

PACKAGING OF QUALIFICATIONS

The national vocational qualifications are packaged as per following:

National Vocational Certificate Level-4 in Surgical Instrument Manufacturing Technician (Supervisor)

- Supervise Production Process
- Ensure Quality of Products
- Develop Entrepreneurial Skills
- Manage Human Resource Services
- Develop Advance Computer Application Skills
- Perform Advanced Communication
- Analysis Workplace Policy and Procedures
- Contribute to Work Related Health and Safety (WHS) Initiatives

National Vocational Certificate Level-3 in Surgical Instrument Manufacturing Technician (Surgical Forger)

Apply Heat Treatment

Develop Sheet Metal Surgical Instruments

Perform Manual Machining

Perform Forging

Manage Personal Finances

Perform Computer Application Skills

Communicate at Workplace

Identify and Implement Workplace Policy and Procedures

Apply Work Health and Safety Practices (WHS)

National Vocational Certificate Level-2 in Surgical Instrument Manufacturing Technician (Instrument Maker)	**Perform Packing**
	Assemble Surgical Instruments
	Perform Grinding
	Perform Polishing
	Perform Basic Computer Application (Specific)
	Perform Basic Communication (Specific)
	Communicate the Workplace Policy and Procedure
	Comply Personal Health and Safety Guidelines

102200844 Comply Personal Health and Safety Guidelines

Overview: This Competency Standard identifies the competencies required to protect/apply occupational Safety, health and Environment at workplace according to the industry's approved guidelines, procedures and interpret environmental rules/regulations. Trainee will be expected to identify and use Personal Protective Equipment (PPE) according to the work place requirements. The underpinning knowledge regarding Observe Occupational Safety and Health (OSH) will be sufficient to provide the basis for the job at workplace.

CU1. Identify Personal Hazards at Workplace	**P1:** Identify risk to personal health **P2:** Identify hygiene and safety at work place **P3:** Identify processes **P4:** Identify tools, equipment and consumable materials that have the potential to cause harm **P5:** Report, identified risk to Health, hygiene and safety to concerned
CU2. Apply Personal Protective and Safety Equipment (PPE)	**P1:** List the Personal Protective equipment **P2:** Select personal protective equipment in terms of type and quantity according to work orders. **P3:** Wear personal protective equipment according to job requirements. **P4:** Clean personal protective equipment **P5:** Stored Personal Protective equipments in proper place after use.
CU3. Comply Occupational Safety and Health (OSH)	**P1:** Maintain cleanliness and hygiene as per organizational policy **P2:** Comply with Health, hygiene and safety precautions before starting work **P3:** Comply organizational Health, hygiene and safety guidelines during work **P4:** Deal with resolvable problems according to prescribed

	procedures
	P5: Report un resolvable problems to concerned
	P6: Place the tools equipment etc at their prescribed place after completion of work
CU4. Dispose of hazardous Waste/materials from the designated area.	**P1:** Identify hazardous waste materials which needs to be disposed off
	P2: Segregate hazardous or non-hazardous waste carefully from the designated area as per approved procedure
	P3: Use proper disposal hazardous containers for dispose-off hazardous waste as per procedure
	P4: Take necessary precautions like putting masks and gloves while disposing hazardous waste/ materials as per standard operating procedure

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Explain safety rules and regulations of organization

K2: List Personal protection and safety Equipment

K3: Describe meaning of Safety signs and symbols

K4: Demonstrate understanding of safety related Standard Operating Procedure/guidelines

K5: Describe waste disposal SOPs

K6: Explain best practices relating to clean and safe work environment

Critical Evidence(s) Required

The candidate needs to produce following critical evidence (s) to be competent in this competency standard:

A person who demonstrates competency in this unit must be able to provide evidence of maintaining personal health and hygiene practices. The evidence should integrate employability skills with workplace tasks and job roles and verify competency is able to be transferred to other circumstances and environments.

Performance requirements

- Demonstrate Health, hygiene and safety procedures/precautions
- Interpret Health, hygiene and safety signs and symbols
- Access techniques and methods to identify the risks of hazards at workplace
- Perform safety reporting procedures and documentation
- Demonstrate accurate usage of Personal Protective Equipment and First Aid treatment methods
- Identify possible hazards at workplace

041700839 Communicate the Workplace Policy and Procedure

Overview: This unit describes the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision.

Competency Units	Performance Criteria
CU1. Identify workplace communication procedures	**P1.** Identify organizational communication requirements and workplace procedures with assistance from relevant authority **P2.** Identify appropriate lines of communication with supervisors and colleagues. **P3.** Seek advice on the communication method/equipment most appropriate for the task
CU2. Communicate at workplace	**P1.** Use effective questioning, and active listening and speaking skills to gather and convey information **P2.** Use appropriate non-verbal behavior at all times **P3.** Encourage, acknowledge and act upon constructive feedback
CU3. Draft Written Information	**P1.** Identify and comply with required range of written materials in accordance with organizational policy and procedures **P2.** Draft and present assigned written information for approval, ensuring it is written clearly, concisely and within designated timeframes. **P3.** Ensure written information meets required standards of style, format and detail. **P4.** Seek assistance and/or feedback to aid communication skills development

CU4. Review Document	P1. Check draft for suitability of tone for audience, purpose, format and communication style
	P2. Check draft for readability, grammar, spelling, sentence and paragraph construction and correct any inaccuracies or gaps in content.
	P3. Check draft for sequencing and structure
	P4. Check draft to ensure it meets organizational requirements
	P5. Ensure draft is proofread, where appropriate, by supervisor or colleague

Knowledge and Understanding

K1: Key provisions of relevant regulations that may affect aspects of business operations, such as privacy laws

K2: Organizational policies, plans and procedures.

K3: Barriers to communication

K4: Communication model

K5: Verbal and written communication techniques

Critical Evidence(s) Required

A person who demonstrates competency in this unit must be able to provide evidence of the ability to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision. The evidence should integrate employability skills with workplace tasks and job roles and verify competency is able to be transferred to other circumstances and environments.

Required Skills

- Communication skills to identify lines of communication, to request advice, to effectively question, to follow instructions, to receive feedback, and to convey messages clearly and concisely
- Culturally appropriate communication skills to relate to people from diverse backgrounds and to people with diverse abilities
- Literacy skills to identify work requirements, to draft written information and to process basic, relevant workplace documentation
- Problem-solving skills to solve routine problems related to the workplace, under direct supervision.

Range of Variables

Competency unit terms

- Workplace procedures may include:
    - answering telephone calls
    - following instructions
    - informal discussions
    - requests from colleagues
    - using internet and email
    - using voice mail
    - workplace procedures related to specific tasks

- Appropriate people may include:
    - colleagues
    - other staff members
    - supervisors, mentors, trainers or assessors

- Lines of communication may include:
    - formal and informal means

- o verbal or written

- Communication method/equipment may include:
  - o computer network systems

  - o facsimile machines

  - o personal computer equipment including hardware, keyboards, software and communication packages

  - o telephones

- Written information may include:
  - o electronic mail

  - o facsimiles

  - o general correspondence or standard/form letters and memos

  - o handwritten and printed materials

  - o telephone messages or general messages

- Standards may include:
  - o organizational policies

  - o standards set by workgroup

Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to perform a number of routine workplace tasks which include:

- Clear, concise and correct verbal and written communication
- Promptly and appropriately following instructions
- Knowledge of relevant regulations and organization policies and procedures.

001100851 Perform Basic Communication (Specific)

Overview: This unit describes the skills and knowledge required to assist in the development of communication competence by providing information regarding different forms of communication and their appropriate use.

By the end of this program, learners will be able, to communicate more effectively and efficiently by: working in a team, follow supervisor's instructions and develop generic communication work skills at workplace

Competency Units	Performance Criteria
CU1. Communicate in a team to achieve intended outcomes	**P1.** Treat team members with respect **P2.** Maintain positive relationships to achieve common organizational goals **P3.** Get work related information from team **P4.** Identify interrelated work activities to avoid confusion **P5.** Adopt communication skills, which are designed in a team. **P6.** Identify problems in communication with a team **P7.** Resolve Communication barrier through discussion and mutual agreement
CU2. Follow Supervisor's instructions as per organizational SOPs	**P1.** Receive the instructions from Supervisor **P2.** Carry out the instructions of the supervisor **P3.** Report to the supervisor as per organizational SOPs
CU3. Develop Generic communication work skills at workplace	**P1.** Develop basic reading skills **P2.** Develop Basic writing skills **P3.** Develop basic listening skills

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

K1:   Basic Learn and understand Types of communication

K2:   Basic Reading Skills

K3:   Basic Writing skills

K4:   Basic Verbal communication skills

K5:   Basic Problem solving skills

K6:   Basic Self-Management Skills

K7:   Basic Technology Skills

K8:   Basic Interview Skills

K9:   Basic Workplace dress code

K10: Basic The role of team members and functionality of the teams

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Make a list of appropriate communication skills with colleagues and supervisors

061100856 Perform Basic Computer Application (Specific)

Overview: This unit describes the skills and knowledge required to use spreadsheet applications, prepare in page documents, develops familiarity with Word, Excel, Access, PowerPoint, email, and computer graphics basics.

It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets, Microsoft office and computer graphics in under direct supervision or with limited responsibility.

Competency Units	Performance Criteria
CU1. Create Word Documents	**P1.** Open word processing application
	P2. Create a word document
	P3. Customize page layout with relevant name setting
	P4. Set up page in a word document
	P5. Edit word document as required
	P6. Use simple formatting tools when creating the document
	P7. Save word document to directory
	P8. Insert table in a word document
	P9. Insert appropriate images into document as necessary
	P10. Insert header/footer in a word document
	P11. Insert section break in a word document
	P12. Set style in word document
	P13. Select basic Print settings
	P14. Print the document
CU2. Use internet for Browsing	**P15.** Use search engines to open website
	P16. Search data on different topics
	P17. Refine search to increase relevance of information or content
	P18. Navigate a website to access the information or content required

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

K1: Describing formatting styles and their effect on formatting, readability and appearance of documents

K2: Outline purpose, use and function of word-processing software.

K3: Editing in MS Word

K4: Formatting in MS word

K5: Use of different search engines

K6: Use of different web pages

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify the components of computer
- Follow organizational ergonomic work health and safety (WHS) requirements and practices
- Create, open and retrieve documents using customized basic settings
- Format documents by creating tables and adding text, objects and images
- Save and prints documents.
- Download data through web browser

072200879 Perform Polishing

Overview: This standard defines the knowledge, skills and understanding required to perform polishing of surgical instruments.

Competency Units	Performance Criteria
CU1. Prepare workstation for polishing	**P1.** Identify polishing and cleaning processes required for the instrument using work instructions / specification sheets **P2.** Arrange material, tools and gauges for the identified polishing and cleaning processes **P3.** Check quality of work pieces before polishing
CU2. Apply initial polishing	**P1.** Load leather wheel and polishing belt on polishing lathe **P2.** Polish surgical instrument as per required surface finish **P3.** Control the quality of polishing using measuring instruments and gauges **P4.** Handle and store polished instruments to avoid any surface damage
CU3. Apply electrochemical polishing	**P1.** Prepare chemical solution in bath for electrochemical polishing **P2.** Dip instruments into container of the electrochemical bath **P3.** Perform electrochemical polishing using required temperature, time and current **P4.** Rinse instruments with clean water to remove traces of chemicals **P5.** Wash the instruments in dilute solution of sulphuric acid according to material sensitivity **P6.** Wash the instrument in clean water to remove traces of sulphuric acid **P7.** Wash the instruments in hot water

		P8.	Dry instruments with wooden husk completely
		P9.	Inspect the instrument according to specifications
		P10.	Handle and store polished instruments to avoid any surface damage
CU4.	**Apply sand blasting**	**P1.**	Prepare sand blasting machine for operation as per requirements
		P2.	Place / hold instruments inside sand blasting machine and perform operation as per required surface finish
		P3.	Inspect the instrument according to specifications
		P4.	Handle and store polished instruments to avoid any surface damage
CU5.	**Perform Ultrasonic Cleaning**	**P1.**	Fill cleaning chemical solution in the ultrasonic cleaning machine bath up to required level
		P2.	Set temperature of ultrasonic cleaning machine as per product requirements
		P3.	Arrange instruments in a hanger or tray
		P4.	Perform chemical fuming on instruments for specified time duration
		P5.	Dip instruments in chemical for specified time duration
		P6.	Shower instruments with chemical while holding above the machine bath
		P7.	Control the quality of instruments as per requirements
		P8.	Handle and store instruments to avoid any surface damage
CU6.	**Perform passivation**	**P1.**	Boil water in required quantity as per work instructions
		P2.	Dip instruments in boiling water for specified time to check rusting tendency of surfaces
		P3.	Inspect instruments for rusting
		P4.	Fill bath with passivation chemical at required level
		P5.	Dip the instruments in passivation chemical for specified

			time
	P6.	Rinse the instruments in water and dry in hanging position above the passivation bath	
	P7.	Check the quality of instruments as per requirements	
CU7. Perform final polishing	**P1.**	Load leather wheel and polishing belt on polishing lathe	
	P2.	Polish instruments as per required surface finish by using specified emery grain belts (i.e.200,300 & 400)	
	P3.	Use dull brush, buffing or water sand finishing for required final finishing,	
	P4.	Control the quality of polishing as per requirements	
	P5.	Handle and store polished instruments to avoid any surface damage	
	P6.	Prepare report of completed work	

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand health and safety requirements of polishing and cleaning processes

K2: Basic knowledge of leather wheel, polishing belts and their specifications and uses

K3: Identify polishing materials and their application

K4: Understand polishing machine operations

K5: Understand handling and storage requirements of polished instruments

K6: Identify chemicals used in various polishing and cleaning processes

K7: Basic understanding of electrochemical polishing process parameters

K8: Understand holding requirements of electrochemical polishing process

K9: Identify sand blasting materials

K10: Understand finishing application of sand blasting materials

K11: Basic understanding of ultrasonic cleaning process parameters

K12: Knowledge of chemicals used in ultrasonic cleaning (e.g. Trichloroethylene)

K13: Basic understanding of passivation process and chemicals

K14: Identification of materials with rusting tendency

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to perform polishing.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to perform polishing. Further guidance is provided in the *assessment evidence guide* for this competency standard.

List of Tools and Equipment

- Polishing lathe with attachments
- Electrochemical polishing plant
- Sand blasting machine
- Ultrasonic cleaning machine
- Hanging jigs (stands, hanger) for Ultrasonic cleaning machine
- Passivation tubs
- Heating equipment for passivation
- Magnifying glass with light

072200880 Perform Grinding

Overview: This standard defines the knowledge, skills and understanding requiredtoperform grinding of surgical instruments.

Competency Units	Performance Criteria
CU1. Perform wheel grinding	**P1.** Mount grinding wheel on bench grinding machine as per job requirement **P2.** Perform dressing of grinding wheel using appropriate dresser if required **P3.** Grind the instrument to remove excess material as per product requirement **P4.** Control size of instrument during and after grinding using appropriate gauges
CU2. Perform filing	**P1.** Select appropriate file (size and shape) according to job finish requirement **P2.** Clamp the instrument using appropriate vice **P3.** File the instrument according to required shape **P4.** Control shape and size of instrument during and after filing using appropriate gauges
CU3. Perform drilling	**P1.** Prepare pedestal drill machine using drill bits and fixtures according to job requirement **P2.** Sharpen the drill bit using tool grinder if required **P3.** Clamp the workpiece on drill machine using fixtures **P4.** Drill holes in workpiece as per required sizes **P5.** Perform countersink on drilled holes where required **P6.** Perform reaming in drilled holes where required **P7.** Perform tapping in drilled holes where required **P8.** Control quality of instrument during and after drilling using appropriate gauges **P9.** Prepare report of completed work.

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand health and safety requirements of grinding work

K2: Understand inspection and usage of grinding wheels

K3: Understand grinding wheel dressing requirements

K4: Understand gauges used for size and shape measurement in grinding process

K5: Knowledge about types of vices

K6: Knowledge about types of files

K7: Knowledge about types of drill bits, reamers and taps

K8: Understand drill bit sharpening

K9: Understand cutting lubricants used in drilling and tapping

K10: Basic understanding of commonly used drilling processes

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to perform grinding.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to perform grinding. Further guidance is provided in the assessment evidence guide for this competency standard.

List of Tools and Equipment

- Bench grinding machine with dust collector
- Pedestal drilling machine with accessories (chucks, sleeves etc.)
- Machine Vices

- Measuring instruments and gauges
- Tool and cutter grinder machine
- Personal Protective Equipment

072200881 Assemble Surgical Instruments

Overview: This standard defines the knowledge, skills and understanding required to assemble surgical instruments.

Competency Units	Performance Criteria
CU1. Perform fastening	**P1.** Drill holes in work pieces at specified areas **P2.** Use pin grinder at narrow areas if required **P3.** Assemble the instrument components by riveting where applicable **P4.** Tap drilled holes and assemble the surgical instrument components using screws where applicable **P5.** Check functionality and quality of surgical instruments and prepare a report
CU2. Apply setting	**P1.** Adjust alignment of surgical instruments using mallet hammer **P2.** Grind / file the surgical instruments where required **P3.** Check functionality of surgical instruments and prepare a report
CU3. Inspect quality of instruments	**P1.** Gather technical sheets, drawings, samples etc. **P2.** Arrange required measuring tools and gauges for quality inspection **P3.** Check setting of surgical instruments as per specification sheet or sample **P4.** Measure sizes and shapes of surgical instruments using gauges **P5.** Prepare quality inspection report

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1:   Understand usage of hammers / mallets

K2:   Understand usage of files

K3:   Understand usage of pin grinder

K4:   Understand usage of drill machine

K5:   Understand sharpness requirements of drill bits

K6:   Understand instrument functionality requirements

K7:   Understand usage of riveting press

K8:   Understand usage of measuring instruments and gauges

K9:   Understand technical drawings

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to assemble surgical instruments.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to assemble surgical instruments. Further guidance is provided in the assessment evidence guide for this competency standard.

List of Tools and Equipment

- Personal Protective Equipment
- Riveting press
- Orbital riveting punch "peen" (to develop the shape on the rivets)
- Pin grinder
- Wheel Grinding machine
- Hammers

- Mallets
- Measuring instruments and gauges
- Drill Machine
- Screw drivers set
- Combination plier
- Allen key set (L-key)

072200882 Perform Packing

Overview: This standard defines the knowledge, skills and understanding requiredtoperform packing of surgical instruments.

Competency Units	Performance Criteria
CU1. Inspect quality of instruments	**P1.** Prepare inspection workstation including measuring and inspection tools **P2.** Select appropriate inspection sample size as per customer requirements **P3.** Measure and record sizes of instruments **P4.** Check functionality of the instruments **P5.** Inspect surface finish as per finished product requirements **P6.** Mark all non-conformances on inspected product and send to relevant department for necessary measures **P7.** Handle instruments with care to avoid any surface damage **P8.** Store inspected products on instrument tray and update tag (bin card, tray card, process travel card etc.) for next process **P9.** Prepare inspection report in prescribed format
CU2. Perform Laser Marking	**P1.** Load marking design in machine software and make necessary adjustments **P2.** Prepare laser marking machine (adjust laser head height, bed position, frequency, colour, current etc.) **P3.** Mount jigs / fixtures on machine bed in appropriate position **P4.** Mark designs on instruments using laser marking machine **P5.** Control quality of laser marking for size, position and

			colour
		P6.	Handle and store instruments with care to avoid any surface damage
CU3.	**Perform stamping**	**P1.**	Prepare workstation according to work instructions
		P2.	Arrange and set stamping tools (manual punch, hammer, stamping die / punch) as per process requirement
		P3.	Perform punching on the instrument in designated area
		P4.	Control quality of punching
		P5.	Handle and store instruments with care to avoid any surface damage
CU4.	**Perform etching**	**P1.**	Clean the instrument surface to ensure dryness
		P2.	Adjust stencil on etching machine and pour etching chemical on stencil
		P3.	Adjust etching current according to product thickness
		P4.	Perform etching by placing the instrument on etching stencil for set time, while ensuring connection with earth rod
		P5.	Control quality of etching for position and sharpness
		P6.	Clean the etching surface with cleaner chemical and dry with cotton
		P7.	Handle and store instruments with care to avoid any surface damage
CU5.	**Perform final packing**	**P1.**	Clean the instruments with cotton
		P2.	Apply lubricant on instrument joints
		P3.	Arrange packing material as per packing instructions
		P4.	Pack the instruments as per packing instructions
		P5.	Apply labels on packages as per customer instructions and shipment requirements

	P6. Store the packages in designated storage area as per stacking instructions

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand health and safety requirements of grinding work

K2: Understand measuring tools and gauges

K3: Understand product technical drawing

K4: Understand instrument functionality

K5: Understand surface finish requirements

K6: Understand basic production processes

K7: Knowledge of 7 quality tools

K8: Understand Laser marking machine operations

K9: Knowledge about basic troubleshooting of Laser Marking machine

K10: Understand basic adjustment/editing tools of Laser marking design software

K11: Understand stamping press operations

K12: Understand etching machine and its operations

K13: Knowledge of etching and cleaning chemicals and their application

K14: Knowledge of packing materials and packing techniques

K15: Understand packaging and labelling requirements

K16: Understand stacking requirements

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to perform packing.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to perform packing. Further guidance is provided in the assessment evidence guide for this competency standard.

List of Tools and Equipment

- PPE
- Inspection gauges and measuring instruments
- Magnifying glass with light
- Laser marking machine
- Fixtures for machines
- Etching machine
- Punching press
- Punching hammer
- Stamping die
- Strapping machine
- Label printer
- Bar code printer
- Bar code reader
- Computer system along with all accessories
- Weighing scale

102200846Apply Work Health and Safety Practices (WHS)

Overview: This unit describes the skills to work with safety and participate in hazard assessment activities, follow emergency procedures and participate OHS practices in process.

Competency Units	Performance Criteria
CU1. Implement safe work practices at work place	**P1.** Implement relevant rules and procedures of WHS at work place. **P2.** Comply with duty of care requirements **P3.** Use personal protective equipment according to safe work practices **P4.** Contribute to WHS consultative activities **P5.** Raise WHS issue with relevant personnel
CU2. Participate in hazard assessment activities a work place	**P1.** Identify hazards or WHS issues in the workplace to relevant personnel **P2.** Assess and control risks according to own level of responsibility, in line with workplace procedures **P3.** Report hazards or WHS issues in the workplace to relevant personnel **P4.** Document risk control actions as required
CU3. Follow emergency procedures at workplace	**P1.** Report emergencies or incidents promptly to relevant personnel **P2.** Deal with emergencies in line with own level of responsibility **P3.** Implement evacuation procedures as required
CU4. Participate in OHS consultative processes	**P1.** Contribute to workplace meetings, inspections or other consultative activities **P2.** Raise OHS issues with designated persons in accordance with organizational procedures **P3.** Take actions to eliminate workplace hazards or to reduce

	risks

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Outline the WHS rights and responsibilities that apply to own role

K2: Explain the term duty of care

K3: Describe typical health and safety roles in the workplace

K4: List and describe common safety signs and symbols

K5: Explain procedures for reporting hazards, risks, incidents and accidents

K6: Identify and describe common hazards and major causes of accidents relevant to the workplace

K7: Explain what the term risk control means

K8: List and describe potential emergency situations and how to respond to them

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

Demonstrate evidences of the Health and safety Processes to avoid any incident.

Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to:

- Complete work tasks according to work health and safety (WHS) legislative and workplace requirements, including:

- o Correctly using personal protective equipment (PPE)
- o Following safety signs and symbols
- o Communicating WHS issues to relevant personnel
- Participate in consultation about WHS issues
- Identify and report hazards according to workplace requirements
- Assess and control risks and document risk control measures according to own level of responsibility
- Follow procedures for responding to incidents and emergencies.

041700840 Identify and Implement Workplace Policy and Procedures

Overview: This unit describes the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.

Competency Units	Performance Criteria
CU1. Identify workplace policy & procedures	**P1.** Identify the workplace policy & procedures **P2.** Apply appropriate strategies that can be used to measure whether your workplace health and safety obligations are being met. **P3.** Assure the policies are realistic has the time, resources and personnel to implement **P4.** Implement the policy & procedures that reflects the organizations commitments **P5.** Ensure the appropriate methods of implementation, outcomes and performance indicators
CU2. Implement workplace policy & procedures	**P1.** Apply and assign responsibility for recording systems to track continuous improvements in policy & procedures **P2.** Implement strategies for continuous improvement in effective and efficient information
CU3. Communicate workplace policy & procedures	**P1.** Communicate procedures to help implement workplace policy **P2.** Inform those involved in implementing the policy about expected outcomes, activities to be undertaken and assigned responsibilities

CU4. Review the implementation of workplace policy & procedures	P1.	Identify the trends that may require remedial action
	P2.	Record the trends that may require remedial action.
	P3.	Ensure policy and procedures as required are made for continuous improvement of performance

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Legislation, regulations and codes of practice applicable to the organization

K2: internal and external sources of information and organizational policy & procedures

K3: Typical barriers to implementing policies and procedures in an organization.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

Identify evidences of the ability to implement work place policy and procedures. briefly identify work place procedures to avoid incident.

Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to:

- Identify the policies and procedures that comply with legislative requirements and support the organization goals.
- Consult and communicate with relevant stakeholders
- Review and implement the policy and procedures.

001100852 Communicate at Workplace

Overview: This unit describes the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision.

Competency Units	Performance Criteria
CU1. Communicate within the organization	**P1.** Communicate within a department **P2.** Communicate with other departments. **P3.** Use various media to communicate effectively **P4.** Communicate orally and written
CU2. Communicate outside the organization	**P1.** Deal with vendors **P2.** Deal with clients/customers **P3.** Interact with other organisations **P4.** Use various media to communicate effectively **P5.** Work with people of different cultures / backgrounds
CU3. Communicate effectively in workgroup	**P1.** Assess the issues to provide relevant suggestion to group members **P2.** Resolve the issues/ problems /conflicts within the group **P3.** Arrange group working sessions to increase the level of participation in the group processes **P4.** Communicate messages to group members clearly to ensure interpretation is valid **P5.** Communicate style /manner to reflect professional standards/ awareness of appropriate cultural practices **P6.** Act upon constructive feedback

CU4. Communicate in writing	**P1.** Identify relevant procedures for written information
	P2. Use strategies to ensure correct communication in writing .i.e.
	   • correct composition
	   • clarity

		• comprehensiveness
		• accuracy
		• appropriateness
	P3.	Draft assigned written information for approval, ensuring it is written within designated timeframes
	P4.	Ensure written information meets required standards of style, format and detail
	P5.	Seek assistance / feedback to aid communication skills development

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

K1: Importance of intra and inter organizational communication

K2: Basics of business communication

K3: Defining Modes of communication

K4: Effective communication in workgroup

K5: Communicating through writing

K6: The importance of teamwork

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

In your current position, what types of written communication do you use most often? (List them all).

061100858 Perform Computer Application Skills

Overview: This unit describes the skills and knowledge required to use spreadsheet applications, prepare in page documents, develops familiarity with Word, Excel, Access, PowerPoint, email, and computer graphics basics.

It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets, Microsoft office and computer graphics in under direct supervision or with limited responsibility.

Competency Units	Performance Criteria
CU1. Prepare In-page documents as per required information	P1. Set keyboard preferences according to information requirements P2. Layout Page according to information requirements P3. Toggle between Languages P4. Identify the usage of tool bar P5. Insert Columns as per requirement P6. Print the document
CU2. Prepare Spreadsheets as per required information	P1. Create workbook according to information requirements P2. Insert sheet according to information requirements P3. Enter basic formulae / functions using cell referencing when required P4. Correct formulas when error messages occur P5. Use a range of common tools during spreadsheet development P6. Edit columns and rows within the spreadsheet Filter data P7. Save the spreadsheet to a folder on a storage device P8. Format spreadsheet using formatting features as required P9. Incorporate object and chart in spreadsheet P10. Print spreadsheet
CU3. Use MS Office as per required information	P1. Use Microsoft Word for documentation P2. Use Microsoft Excel for documentation P3. Use Microsoft PowerPoint for presentation

	P4.	Perform OneNote
	P5.	Perform Outlook for emails
	P6.	Perform Publisher applications
CU4. Perform computer graphics in basic applications	**P1.**	Perform graphic fundamentals in basic applications
	P2.	Draw Points and lines to make images
	P3.	Draw Dots in space to make images
	P4.	Draw lightening blot Shapes to make images
	P5.	Enlarge circles and rectangles to block in forms
CU5. Create Email account for communications	**P1.**	Make email account for communications
	P2.	. Compose text of an email message according to organizational guidelines as required
	P3.	Create an automatic signature for the user
	P4.	Attach files to email message where required
	P5.	Send email message
	P6.	Reply to / forward a received message using available features
	P7.	Save an attachment to the relevant folder
	P8.	Save email message using available settings
	P9.	Adjust email accounts to restrict and quarantine possible email security problems
		• Print email message as required

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

K1: List basic technical terminology related to reading help files and prompts

K2: Explain the effect of formatting and appearance on the readability and usability of spreadsheets

K3: Outline log-in procedures relating to accessing a personal computer (PC)

K4: Describe the purpose, use and function of spreadsheet applications.

K5: Understand **MS Word** to create documents, flyers, publications

K6: Understand **MS PowerPoint** to create presentations

K7: Understand **MS Excel** to store, organize, and manipulate data

K8: Understand **OneNote** to organize data you collect including handwritten notes, drawings, screen captures, audio clips, and more

K9: Understand of **Publisher** to create extensive publications, posters, flyers, menus

K10: Understand **Outlook** to manage email and calendars, to do lists, and contacts

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Create spreadsheets
- Customize basic settings
- Format spreadsheets
- Apply basic formulas
- Insert objects and charts in spreadsheets
- Save and print spreadsheets.

041300867 Manage Personal Finances

Overview: This unit of competency describes the outcomes required to manage develop, implement and monitor a personal budget in order to plan regular savings and manage debt effectively.

Competency Units	Performance Criteria
CU1. Develop a personal budget	**P1.** Calculate current living expenses using available information to prepare a personal budget. **P2.** Keep a record of all income and expenses for a short period of time to help estimate ongoing expenses. **P3.** Subtract total expenses from total income to determine a surplus or deficit budget for the specified period. **P4.** Find reasons for a deficit budget and ways to reduce expenditure identified. **P5.** Identify ways to increase income
CU2. Develop long term personal budget	**P1.** Analyze income and expenditure and set long term personal financial goals. **P2.** Develop a long-term budget based on the outcomes of short-term budgeting. **P3.** Identify obstacles that might affect the business **P4.** Formulate a regular savings plan based on budget
CU3. Identify ways to maximize future finances	**P1.** Determine sources to maximize personal income, **P2.** Get further education or training to maintain or improve future income. **P3.** Identify the need for debt to finance living and other expenses, **P4.** Determine the appropriate levels of debt and repayment. **P5.** Consolidate existing debt, where possible, to minimize interest costs and fees. **P6.** Seek professional money management services.

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Explain the abilities to plan and organize to keep records and monitor a personal budget

K2: Describe abilities to set and review goals

K3: Explain basic financial management and record keeping to enable development and management of a personal budget

K4: Describe benefits of financial goal setting and personal budgeting to enable effective management of personal finances

K5: Outline numeracy skills to compare income and expenditure

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) to be competent in this competency standard:

Demonstrates competency to provide evidence of the ability to manage personal finances. The evidence should integrate employability skills with workplace tasks and job roles and verify competency is able to be transferred to other circumstances and environments.

Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to:

- Develop a personal budget based on analysis of expenditure and income;
- Formulate goals and identify financial contingency plans; and
- Monitor expenditure for a period of up to 2 weeks.

072200883 Perform Forging

Overview: This standard defines the knowledge, skills and understanding required to perform forging.

Competency Units	Performance Criteria
CU1. Perform Sheet Cutting	**P1.** Arrange suitable material and Measure thickness of sheet as per product specification / drawing **P2.** Set shearing parameters as per required strip sizes **P3.** Adjust the Jig size for sheet cutting on shearing press table **P4.** Cut down the large size sheet into strips according to job specification using shearing press **P5.** Measure strips to verify required specifications **P6.** Mount cutting die on power press to cut strips for pre-forge shape (Raw shape)
CU2. Apply hammer stroke	**P1.** Mount both parts of forging dies on drop forged hammer **P2.** Align forging dies as per standard procedure **P3.** Heat up the pre-forged work pieces in furnace to achieve required temperature **P4.** Place preheated pieces in forging die and apply hammer stroke as per requirements **P5.** Remove the forged pieces out of die safely and place in storage container/trolley/bin **P6.** Inspect the size and shape of forged pieces after cooling down to verify required specifications
CU3. Trim extra material	**P1.** Mount trimming die on power press **P2.** Set press parameters (Daylight, stroke etc.) as per job requirements

	P3. Trim the extra material from forged pieces on power press
	P4. Check quality of trimmed forged work pieces
	P5. Perform cold stamping if required and store in designated place
	P6. Prepare report of completed work on prescribed format

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to;

K1: Understand safety precaution and Personal Protective Equipment for forging operations

K2: Identify materials used for making surgical instruments through forging

K3: Understand measurement systems

K4: Understand the basics of technical drawings and symbols

K5: Knowledge of using measuring and marking tools

K6: Understand operating drop forging hammer

K7: Understand operating power press / shearing press

K8: Understand setting up / mounting forging die

K9: Understand setting up / mounting trimming die

K10: Knowledge of cold stamping method

K11: Knowledge of setting furnace temperature

K12: Knowledge of types of defects in forged parts / pieces

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to perform forging.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to perform forging. Further guidance is provided in the *Assessment Evidence Guide* for this competency standard.

List of Tools and Equipment

- First aid box
- Measuring tools (assorted range)
- Work holding devices and attachments
- Gas / Electric furnace with accessories
- Shearing press
- Power press
- Drop forging hammer
- Hammers (assorted range)
- Drop forging machine
- Cutting dies for different product
- Forging dies for different product components
- Trimming Dies for different product components
- Dial Indicator with Magnet Stand
- Exhaust System
- Personal protective equipment
- Marking tools

072200884 Perform Manual Machining

Overview: This standard defines the knowledge, skills and understanding requiredtoperform manual machining.

Competency Units	Performance Criteria
CU1. Perform turning operations	**P1.** Arrange material for turning operations according to job requirement **P2.** Prepare work-piece by required machining (sawing and filing etc.) and get it ready for clamping **P3.** Arrange tools, measuring instruments and holding devices as per work instructions **P4.** Clamp and align the workpiece and tools on lathe machine **P5.** Set lathe machine parameters (Spindle speed (rpm), feed etc.) according to the machining requirements **P6.** Perform machining to achieve required dimensions and surface finish **P7.** Use appropriate measuring tools & instruments to ensure the quality and measurements of work piece according to standards
CU2. Perform milling operations	**P1.** Arrange material for milling operations according to job requirement **P2.** Prepare work-piece for required machining (sawing and filing etc.) and get it ready to clamp **P3.** Arrange the cutters, measuring instruments and holding devices as per work instructions **P4.** Clamp and align the workpiece and tool on milling machine **P5.** Set milling machine parameters (Spindle speed(rpm), feed, depth of cut, etc.) according to the machining requirements

	P6. Perform milling to achieve required dimensions and surface finish
	P7. Use appropriate measuring tools & instruments to ensure the quality and measurements of work piece according to standards

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand safety precaution and Personal Protective Equipment and workplace safety

K2: Identify materials used in commonly produced surgical instruments

K3: Identify commonly produced surgical instruments that require machining operations

K4: Understand work specifications, and instructions

K5: Understand using files and saws

K6: Knowledge of measurement systems

K7: Understand using measuring and marking tools

K8: Understand safe clamping practices

K9: Understand job and tool clamping methods for Milling and Lathe machines

K10: Understand Importance and usage of cutting lubricants

K11: Knowledge of lathe machine types and construction

K12: Knowledge of milling machine types and construction

K13: Understand setting feed, depth of cut and spindle speed according to the work-piece and tool materials

K14: Identify attachments used in Milling / Lathe machines

K15: Identifycutters and tools used for Lathe / Milling operations and their usage

K16: Understand common defects in machined components

Critical Evidence(s) Required

The learner must present evidence of practical observations showing their ability to perform manual machining.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to perform manual machining. Further guidance is provided in the Assessment Evidence Guide for this competency standard.

List of Tools and Equipment

- Lathe machine (with standard accessories)
- First aid box
- Power hacksaw machine
- Hand hacksaw
- Measuring and marking tools (assorted range)
- Work holding devices and attachments
- Pedestal grinder with cutting angle support
- Hammers (assorted range)
- Radius gauge - concave & convex (assorted range)
- Threads gauge -inches / millimeters (assorted range)
- Universal milling machine with standard accessories
- Machine vices
- Boring head
- Plug and snap gauges
- Dial indicator with magnet stand

072200885 Develop Sheet Metal Surgical Instruments

Overview: This standard defines the knowledge, skills and understanding requiredtodevelop sheet metal surgical instruments.

Competency Units	Performance Criteria
CU1. Perform blanking	**P1.** Arrange material and tools required for blanking operation as per work instructions **P2.** Set parameters to perform shearing on shearing press as per required strip sizes **P3.** Mount blanking die on power press **P4.** Adjust machine daylight and stroke according to sheet thickness **P5.** Perform blanking on sheets **P6.** Offload &store sheet scrapand blanks safely at designated places
CU2. Perform punching	**P1.** Arrange material and tools required for punching operation as per work instructions **P2.** Mount and set punching die on press as per work specifications and procedures **P3.** Adjust machine daylight and stroke according to sheet thickness **P4.** Perform punching on blanks **P5.** Offload and store workpieces safely at designated place
CU3. Perform bending	**P1.** Arrange material and tools required for bending operation as per work instructions **P2.** Adjust and set bending die on press as per work specifications and procedures. **P3.** Adjust power / hydraulic press daylight and stroke according to sheet thickness **P4.** Start the required operations as per drawing and job

	specifications
	P5. Offload and store work pieces safely at designated place
CU4. Apply deep draw process	**P1.** Arrange material and tools required for deep draw operation as per work instructions
	P2. Mount and set deep draw dies on hydraulic press as per work specifications and procedures.
	P3. Punchmarks using manual punches on the product wherever applicable
	P4. Operate deep draw process on hydraulic press
	P5. Offload and store work pieces safely at designated place
CU5. Perform spinning	**P1.** Arrange material and tools required for spinning operation as per work instructions
	P2. Clamp the workpiece and tool on spinning lathe machine as per process requirement
	P3. Apply force gradually to the spinning object to achieve required shape and size
	P4. Use appropriate tools and gauges to ensure the quality of the product
	P5. Offload and store work pieces safely at designated place
	P6. Prepare report of completed work

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore,he/she must be able to:

K1: Understand personal protective equipment and workplace safety for sheet metal works

K2: Identify sheet metal materials

K3: Identification of surgical instruments made of sheet metal

K4: Understand the defects of sheet metal manufacturing

K5: Understand methods and techniques of mounting and setting of dies.

K6: Understand power press setting and operation

K7: Knowledge of dies, punches and their components

K8: Understand work specifications, and instructions.

K9: Understand quality of component produced using sheet metal

K10: Understand commonly used operations in sheet metal works

K11: Understand spinning process on spinning lathe machine

K12: Knowledge of operating hydraulic press

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to develop sheet metal surgical instruments.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to develop sheet metal surgical instruments. Further guidance is provided in the Assessment Evidence Guide for this competency standard.

List of Tools and Equipment

- Spinning Lathe machine (with standard accessories)
- First aid box
- Personal protective equipment
- Dial indicator with magnet stand

- Measuring and marking tools (assorted range)
- Hammers (assorted range)
- Radius gauge - concave & convex (assorted range)
- Hydraulic press
- Power press
- Blanking dies
- Bending dies
- Deep draw dies
- Punching dies

072200886 Apply Heat Treatment

Overview: This standard defines the knowledge, skills and understanding requiredtoapply heat treatment to surgical instruments.

Competency Units	Performance Criteria
CU1. Prepare workstation for heat treatment	**P1.** Identify heat treatment processes required for the instrument using work instructions / specification sheets **P2.** Arrange material, tools and gauges for the identified heat treatment processes **P3.** Check quality of workpieces before heat treatment
CU2. Perform annealing	**P1.** Set furnace parameters (temperature, time) as per material requirements **P2.** Place workpieces inside the annealing furnace to achieve set temperature **P3.** Switch off the furnace and let workpieces cool down to room temperature inside the furnace (12 to 15 hours) **P4.** Remove workpieces from furnace, test hardness of workpieces using Rockwell Hardness Tester as per hardness requirements and prepare test report
CU3. Apply heat treatment by conventional method	**P1.** Set furnace parameters (temperature, time) as per material requirements **P2.** Maintain flame quality by adjusting Air: Fuel ratio to avoid carbon deposits on instruments **P3.** Hold workpieces with wires and place in the furnace for specified time **P4.** Remove work pieces safely from furnace and quench in quenching medium (air, water & oil) for specified time **P5.** Remove oil from quenched workpieces using appropriate method (draining by hanging and cleaning with cotton etc.)

		P6.	Perform acid pickling to remove the scales from surface of work pieces
		P7.	Test hardness of workpieces using Rockwell Hardness Tester as per hardness requirements and prepare test report
CU4.	**Apply Vacuum heat treatment**	**P1.**	Prepare vacuum furnace (temperature, time) as per material requirements
		P2.	Perform vacuum heat treatment (vacuum, heating & cooling) on work pieces as per requirement
		P3.	Remove work pieces safely from the furnace after completing the processes
		P4.	Test hardness of workpieces using Rockwell Hardness Tester (scale C) as per hardness requirements and prepare test report
CU5.	**Apply Conveyor Belt Heat Treatment**	**P1.**	Prepare vacuum furnace (temperature, time, speed) as per material requirements
		P2.	Place the workpieces on conveyor belt of the furnace and start the process
		P3.	Remove workpieces from furnace, test hardness of workpieces using Rockwell Hardness Tester as per hardness requirements and prepare test report

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand heat treatment methods and their application

K2: Basic knowledge about materials and their heat treatment requirements

K3: Understand furnace operation (vacuum furnace, conveyor belt furnace, conventional heating furnace, annealing furnace)

K4: Basic information about commonly used quenching media

K5: Understand usage of Rockwell Hardness Tester (scale C)

K6: Understand basic concepts of hardness and brittleness

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to apply heat treatment to surgical instruments.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to apply heat treatment. Further guidance is provided in the assessment evidence guide for this competency standard.

List of Tools and Equipment

- PPE
- Annealing Furnace
- Conventional Heating Furnace
- Vacuum Furnace
- Conveyor Belt Furnace
- Rockwell Hardness Tester

102200848 Contribute to Work Related Health and Safety (WHS) Initiatives

Overview: This unit describes the skills and knowledge required to manage the identification, review, development, implementation and evaluation of effective participation and consultation processes as an integral part of managing work health and safety (WHS).

Competency Units	Performance Criteria
CU1. Contribute to initiate work-related health and safety measures	**P1.** compile database on work-related health and safety **P2.** Identify measures that address legal obligations. **P3.** Consult with individuals/ parties to formulate measures and initiatives **P4.** Consult with individuals/parties to identify factors impacting on work-related health and safety **P5.** Participate in consultative meetings.
CU2. Contribute to establish work-related health and safety measures	**P1.** Assist in planning of work-related health and safety measures **P2.** Contribute to the development of work-related health and safety measures **P3.** Identify to implement work-related health and safety measures i.e. • resourcing requirements, • timelines • responsibilities **P4.** Assist to implement work-related health and safety measures and initiatives i.e. • scheduling • liaison • administering resources • communication
CU3. Contribute to ensure legal requirements of WHS measures	**P1.** Apply knowledge of all aspects of WHS measures to • Consultation • workplace policies

	• participation processes
	P2. Make sure that WHS measures are in accordance with legal requirements
CU4. Contribute to review WHS measures	**P1.** Develop effective means to review work-related health and safety measures
	P2. Assist individuals and parties related to WHS measures in following activities
	• preparing reports
	• communicating review
	• evaluating outcomes
CU5. Evaluate the organization's WHS system	**P1.** Assess ongoing compliance with OHS (Occupational Health and safety)
	P2. Take feedback from concerned persons regarding WHS measures.
	P3. Assess the overall effectiveness of WHS management practices
	P4. Assist the development process of WHS measures in following ways
	• Suggest amendments
	• Document amendments
	• Implement amendments
	P5. Take feedback from concerned persons regarding WHS measures.
	P6. Communicate improvements in WHS Measures

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Explain the application of relevant mandatory health monitoring, including biological monitoring, to help secure work health and safety

K2: Explain the difference between work-related health and safety measures and initiatives designed to meet specific legislative requirements and obligations, and those designed to support non-statutory health promotion programs, and give examples of each

K3: List factors that impact on work-related health and safety and their potential effects

K4: Identify internal and external sources of WHS information and data, and how to access them

K5: Outline organizational WHS and other relevant policies, procedures, processes and systems, including human resources

K6: Summarize relevant WHS legislation, other legislation (such as privacy and workers compensation) and common law rights and duties specific to work-related health and safety measures and initiatives

K7: Describe work-related health and safety measures and initiatives that either address specific legislative requirements and obligations, or support non-statutory health prevention programs, including:

- o The factors impacting on worker health and safety that they address
- o Effectiveness
- o Costs and benefits
- o Criteria for decisions regarding their implementation in a specific workplace
- o How they should be implemented.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) to be competent in this competency standard:

A person who demonstrates competency in this unit must be able to provide evidence of the ability to contribute to work-related health and safety measures and initiatives. The evidence should integrate employability skills with workplace tasks and job roles and verify competency is able to be transferred to other circumstances and environments.

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Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to:

- Contribute to scoping, establishing, reviewing and evaluating work health and safety (WHS) measures and initiatives to:
  - o Address specific legislative requirements and obligations
  - o Support non-statutory health promotion programs
- Contribute to ensuring work-related health and safety measures and initiatives comply with legislative requirements and obligations
- Liaise with relevant people internal and external to the organization.

041700841 Comply with Workplace Policy and Procedures

Overview: This unit describes the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.

Competency Units	Performance Criteria
CU1. Manage work timeframes	**P1.** Complete work tasks within deadlines in according to order of priority **P2.** Supervisors are informed of any delays in work times or projects
CU2. Manage to convene meeting	**P1.** Develop agenda in line with meeting purpose **P2.** Selection of participants and notify them accordingly **P3.** Confirm meeting arrangements according to the time **P4.** Record the minutes of the meeting
CU3. Decision making at workplace	**P1.** Define the problem, challenge, or opportunity **P2.** Generate an array of possible solutions or responses **P3.** Evaluate the costs and benefits, or pros and cons, associated with each option **P4.** Assess the impact of the decision and modify the course of action as needed
CU4. Set and meet own work priorities at instent	**P1.** Take initiative to prioritize and facilitate competing demands to achieve organization goals and objectives **P2.** Use technology efficiently and effectively to manage work priorities and commitments **P3.** Maintain appropriate work-life balance
CU5. Develop and maintain professional	**P1.** Assess personal knowledge and skills against competency **P2.** Participate in networks to enhance personal knowledge, skills and work relationships

competence	**P3.** Seek feedback from employees, clients and colleagues to develop and improve competence
CU6. Follow and implement work safety requirements	**P1.** Identify and report emergency incidents **P2.** Practice organizational policy and procedures for responding to emergency incidents **P3.** Identify and implement workplace procedures and work instructions for controlling risks

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Healthy work life balance

K2: Meeting terminologies, structures and arrangements

K3: Relevant organizational procedures and policies regarding meetings, chairing and minutes.

K4: Barriers to implement policies and procedures in an organization and possible strategies to address them.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) to be competent in this competency standard:

A person who demonstrates competency in this unit must be able to provide evidence of the ability to understand workplace policy and procedures. The evidence should integrate employability skills with workplace tasks and job roles and verify competency is able to be transferred to other circumstances and environments

Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to:

- Develop the policies and procedures that comply with legislative requirements and support the organization goals.

Demonstrate conventions and procedures formal and informal meeting including;

- Establish meeting agenda
- Nominate & invite meeting participants
- Organize and confirm meeting participants
- Record and store the meeting document

001100853 Perform Advanced Communication

Overview: This unit describes the performance outcomes, skills and knowledge required to develop communication skills used professionally. It covers plan and organise work and conduct trainings at workplace, along with demonstrating professional skills independently.

Competency Units	Performance Criteria
CU1. Demonstrate professional skills	**P1.** Use different modes of communication to communicate • Speaking • Reading • Writing • Listening • Presentation • visual representation etc **P2.** Develop CV Skills according requirements **P3.** Upgrade professional skills by attending trainings, webinars, conferences etc. **P4.** Perform Continuous professional development as required at workplace **P5.** Develop interview skills
CU2. Plan and Organize work	**P1.** Identify task requirements. **P2.** Plan steps to complete tasks. **P3.** Review planning and organizing process. **P4.** Organize work.
CU3. Provide trainings at workplace	**P1.** Assess the need for training **P2.** Prepare trainees for the learning experience **P3.** Present training session **P4.** Support trainees in managing their own learning **P5.** Facilitate group learning **P6.** Provide opportunity for practice **P7.** Provide feedback on progress on trainees **P8.** Review delivery experience

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

K1: Explaining the training skills

K2: Identification of the professional skills

K3: Describing the advanced language skills

K4: Understanding of the assessment and trainee's feedback methods

K5: Direct and indirect communication methods

K6: Explaining the need of the training type at the work place

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Job sheet
- Office emails and coordination reports
- Feedback proforma

061100858 Develop Advance Computer Application Skills

Overview: This unit provides an overview of Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards, i.e. Data Entry, Power Point Presentation and managing data base and graphics for Design

It applies to individuals employed in a range of work environments who need to be able to present a set range of data in a simple and direct forms

Competency Units	Performance Criteria
CU1. Manage Information System to complete a task	**P1.** Perform Data Entry in MS office **P2.** Manage File/folder in MS office **P3.** Perform Scanning of document **P4.** Maintain Office Record in drives **P5.** Perform Printing of document **P6.** Search required Files/Folders **P7.** Convert Files in required format. **P8.** Manage sizes of Files/Folders • Compress • Zip /unzip
CU2. Prepare Presentation using computers	**P1.** Prepare presentation as per requirements, i.e. • Open blank presentation and add text / graphics • Create a simple design for a presentation • Apply existing styles within a presentation • Use presentation template and slides to create a presentation • Use various tools to improve the look of the presentation • Save presentation to the appropriate storage device and folder with required name **P2.** Customize basic settings to meet user requirements **P3.** Format presentation as require

	• Develop organizational charts
	• Add objects and manipulate to meet presentation purposes
	• Modify slide layout, including text and colours, to meet presentation requirements
	• Save presentation in another format
	• Save to storage device and close presentation
	P4. Add slide show effect into presentation as required to enhance the presentation
	• Incorporate pre-set Animation
	• Apply Multimedia effects
	• Record Narration
	• Apply hyperlink
	• Apply video
	• Rehearse Timings
	• Test presentation for overall effect
	P5. Print the presentation
	• Select appropriate print format for presentation
	• Select preferred slide orientation
	• Add notes and slide numbers
	• Preview slides and run spell check before presentation
	• Print selected slides and submit presentation to appropriate person for feedback
	P6. Practice verbal presentation
	P7. Practice presentation through AV Aids
CU3. Use Microsoft Access to manage database	**P1.** Collect the data using a standard data base package.
	P2. Start access to manage database .i.e.
	• identify problem statement of Data
	• Develop a table with fields /attributes according to database usage/ user requirements
	• Create a primary key and establish an index for each

	table
	- Modify table layout and field attributes as required - Create a relationship between the two tables - Add data in a table according to information requirements - Add records as required - delete records as required - Save database to storage area - close down database to storage area - Apply criteria in the following Query - SQL view of Query - Wildcards of query - Query Criteria **P3.** Customize basic settings: - Adjust page layout to meet user requirements - Open and view different toolbars - Format font as appropriate for the purpose of the database entries - Create reports - Design reports to present data in a logical sequence - Modify reports to include or exclude additional requirements - Distribute reports to appropriate person in a suitable format **P4.** Create forms - Use a wizard to create a simple form - Open existing database and modify records through a simple form - Rearrange objects within the form to accommodate information requirements

CU4. Develop graphics for Design	P1. Develop graphic design concepts based on a thorough understanding of the communication need
	P2. Use design techniques confidently to produce designs
	P3. Integrate design tools skillfully to produce designs
	P4. Evaluate the success of completed designs to meet objectives
	P5. evaluate feedback from client / peers

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

K1: List basic technical terminology to read help files and prompts

K2: Outline the different types of formal and informal presentations

K3: Explain Power point presentation

K4: Segregation of Data

K5: Define the relation among data

K6: Define criteria in the query

K7: Creates and modify reports and forms.

K8: Outline basic database design principles

K9: Current graphic design software

K10: Discuss features of current and emerging technologies used in graphic design practice and the options they present for effective graphic design solution

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Design and develop a simple database using a standard database package
- Create, format and prepare presentations for distribution and display
- Customize basic settings
- Add slide show effects.
- Generate employment report from given data by using Microsoft Access.

041300869 Manage Human Resource Services

Overview: This unit describes the skills and knowledge required to plan, manage and evaluate delivery of human resource services, integrating business ethics. It applies to individuals with responsibility for coordinating a range of human resource services across an organization. They may have staff reporting to them.

Competency Units	Performance Criteria
CU1. Determine strategies for delivery of human resource services	**P1.** Analyze business strategy and operational plans to determine human resource requirements
	P2. Review external business environment that likely impact on organization's human resource requirements
	P3. Consult line and senior managers to identify human resource needs in their areas
	P4. Review organization's requirements for diversity in the workforce
	P5. Deliver human resource services that comply with business goals
	P6. Develop strategic action plan for delivery of human resource services
	P7. Develop roles and responsibilities of human resource team
	P8. Develop quality assurance policy
CU2. Manage the delivery of human resource services	**P1.** Communicate human resource strategies and services to internal and external stakeholders
	P2. Develop and negotiate service agreements between - The human resource team, - Service providers - Client groups
	P3. Document service specifications, performance standards and timeframes
	P4. Document /communicate service Specifications,

		• Performance standards
		• Timeframes
	P5.	Monitor Quality assurance processes
	P6.	Ensure that services are delivered by appropriate providers, according to service agreements and operational plans
	P7.	Identify underperformance of human resource team or service providers
CU3. Evaluate human resource service delivery	**P1.**	Establish Management information system for human resource services
	P2.	Conduct survey to determine level of satisfaction
	P3.	Analyze feedback of survey
	P4.	Recommend changes to service delivery
	P5.	Support agreed change processes across the organization
CU4. Manage integration of business ethics in human resource practices	**P1.**	Ensure ethics in personal behavior
	P2.	Ensure code of conduct is observed across the organization,
	P3.	Observe confidentiality requirements in dealing with all human resource information
	P4.	Deal promptly with unethical behavior
	P5.	Ensure all persons responsible for human resource functions understand requirements regarding their ethical behavior

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Identify the key provisions of legal and compliance requirements that apply to managing human resources

K2: Summarize the organization's code of conduct

K3: Explain human resource strategies and planning processes and their relationship to business and operational plans

K4: Describe performance and contract management

K5: Explain how feedback is used to modify the delivery of human resources.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) to be competent in this competency standard:

A person who demonstrates competency in this unit must be able to provide evidence of the ability to manage human resource services. The evidence should integrate employability skills with workplace tasks and job roles and verify competency is able to be transferred to other circumstances and environments.

Performance requirements

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Demonstrated evidence is required of the ability to:

- Plan and manage human resource delivery within legislative, organizational and business ethics frameworks
- Communicate effectively with a range of senior personnel
- Identify and arrange training support where appropriate
- Calculate human resource return on investment within the organization.

041300860 Develop Entrepreneurial Skills

Overview: This Competency Standard identifies the competencies required to develop entrepreneurial skills, in accordance with the organization's approved guidelines and procedures. You will be expected to develop a business plan, collect information regarding funding sources, develop a marketing plan and develop basic business communication skills. Your underpinning knowledge regarding entrepreneurial skills will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Develop a business plan	**P1.** Conduct a market survey to collect following information • Customer /demand • Tools, equipment, machinery and furniture with rates • Raw material • Supplier • Credit / funding sources • Marketing strategy • Market trends • Overall expenses • Profit margin **P2.** Select the best option in terms of cost, service, quality, sales, profit margin, overall expenses **P3.** Compile the information collected through the market survey, in the business plan format
CU2. Collect information regarding funding sources	**P1.** Identify the available funding sources based on their terms and conditions, maximum loan limit, payback time, interest rate **P2.** Choose the best available option according to investment requirement **P3.** Prepare documents according to the loan agreement requirement **P4.** Include the information of funding sources in the business plan

CU3. Develop a marketing plan	**P1.** Make a marketing plan for the business including product, price, placement, promotion, people, packaging and positioning **P2.** Include the information of marketing plan in the business plan
CU4. Develop basic business communication skills	**P1.** Communicate with internal customers e.g.: labor, partners and external customers e.g.: suppliers, customers etc., using effective communication skills **P2.** Use different modes of communication to communicate internally and externally e.g.: presentation, speaking, writing, listening, visual representation, reading etc. **P3.** Use specific business terms used in the market

Knowledge and Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

K1: Explain the 7ps of marketing including product, price, placement, promotion, people, packaging and positioning

K2: Describe 7Cs of business communication

K3: Define different modes of communication and their application in the industry

K4: Enlist specific business terms used in the industry

K5: Enlist the available funding sources

K6: Explain how to get loan to start a new business

K7: Explain market survey and its tools e.g: questionnaire, interview, observation etc

K8: Describe the market trends for specific product offering

K9: State the main elements of business plan

K10: Explain how to fill the business plan format

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) to be competent in this competency standard:

A person who demonstrates competency in this unit must be able to provide evidence of the ability to develop Entrepreneurial Skills.

Performance requirements

- Conduct market survey and formulate business plans in terms of feasibility, investment potential, risk, and completeness.
- Demonstrate the use of both verbal and non-verbal business communication.
- Effectively present business ideas and profile

072200887 Ensure Quality of Products

Overview: This standard defines the advanced knowledge, skills and understanding requiredtoensure quality of surgical instruments.

Competency Units	Performance Criteria
CU1. Establish product quality requirements	**P1.** Enlist quality parameters of the instruments with their values and tolerances by interpreting product drawing and technical specifications **P2.** Provide master samples of products to relevant processes **P3.** Communicate quality requirements to concerned supervisors and quality inspectors
CU2. Develop quality testing procedures	**P1.** Identify tools, instruments and gauges for testing quality parameters in different processes **P2.** Prepare standard testing procedures including frequency, sample size, report templates etc. **P3.** Communicate quality testing procedures to concerned supervisors and quality inspectors
CU3. Assign jobs to quality inspectors	**P1.** Prepare job descriptions of quality inspectors **P2.** Prepare job schedule for quality inspectors **P3.** Train quality inspectors on their assigned tasks and communication procedures (recording, reporting, presenting etc.) **P4.** Monitor work of quality inspectors, provide feedback and make necessary adjustments in job assignments
CU4. Prepare quality assurance report	**P1.** Gather quality and production reports from quality inspectors and concerned supervisors at defined intervals **P2.** Consolidate the data in concise form for further analysis **P3.** Analyse data using relevant quality tools (control charts,

			bar graphs, normal charts etc.)
	P4.	Compile report of quality conformance	
	P5.	Submit and present the report to management within defined timeline	
CU5. **Ensure compliance to quality management system**	**P1.**	Prepare checklist for assessment of conformance to quality management system	
	P2.	Train quality inspectors to conduct compliance assessment	
	P3.	Gather and compile compliance assessment reports	
	P4.	Compile summary report of compliance to quality management system	
	P5.	Submit and present the report to management within defined timeline	

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand technical drawings and specifications

K2: Understand basic of quality management system

K3: Understand usage of testing instruments, tools and gauges

K4: Understand 7 quality tools

K5: Understand instrument functionality

K6: Understand quality requirements of surgical instruments

K7: Understanding basics of raw material grades

K8: Understand raw material quality parameters

K9: Understand documentation and communication techniques

K10: Basic understand adult learning principals

K11: Understand data compilation and report writing

K12: Knowledge about constituents of job description

K13: Understand basic scheduling techniques

K14: Understand preparing work plans

K15: Knowledge of personnel management

K16: Understand basic computer operations

K17: Knowledge of visual assistant (Word, Excel, Power Point)

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to ensure quality of products.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to ensure quality of products. Further guidance is provided in the assessment evidence guide for this competency standard.

List of Tools and Equipment

- Quality Management System Standard and Manual
- Computer system along with all accessories
- Laser Printer
- Scanner

072200888 Supervise Production Process

Overview: This standard defines the advanced knowledge, skills and understanding requiredtosupervise production process or by his managers

Competency Units	Performance Criteria
CU1. Prepare	**P1.** Identify the machinery required for relevant process
	P2. Ensure the availability of required tools and equipment for

	departmental production plan		relevant process
		P3.	Incorporate machine maintenance schedule in the production plan
		P4.	Prepare machine wise production schedule to ensure intime delivery
		P5.	Ensure the usage of PPE according to process requirement
CU2.	**Acquire material from store**	**P1.**	Generate the demand order to raw material store as per production schedule
		P2.	Ensure availability of raw material as per required generated order (Metallurgical and Physical)
		P3.	Distribute raw material to production processes in required quantities
CU3.	**Assign duties to workers**	**P1.**	Assign jobs to the workers along with work instructions
		P2.	Train workers on their assigned tasks and work instructions
		P3.	Monitor the workers' performance as per instructions
CU4.	**Ensure production operations according to the plan**	**P1.**	Ensure quality of product as per requirement
		P2.	Ensure quantity of instrument produced as per production plan
		P3.	Make sure the completion of production process within the lead time
		P4.	Confirm data entry at every stage in process travel cards or process production reports
CU5.	**Prepare production report**	**P1.**	Gather and consolidate the production data in concise form for further analysis
		P2.	Analyse data using relevant quality tools (control charts, bar graphs, normal charts etc.)
		P3.	Compile production report and submit and present the

	report to management within defined timeline

Knowledge and Understanding

The candidate must possess underpinning knowledge and understanding required to carry out tasks covered in this competency standard. Therefore, he/she must be able to:

K1: Understand the steps involved in the surgical instrument production process

K2: Understand the production scheduling and material requirements planning

K3: Understand personnel management

K4: Understandusage of testing instruments, tools and gauges

K5: Understand raw material grades and quality parameters

K6: Understand the data compilation and report writing

K7: Understand thepreparing work plans

Critical Evidence(s) Required

The candidate must present evidence of practical observations showing their ability to supervise production process.

They must also complete a knowledge assessment test (written or oral) together with a portfolio of evidence that shows their knowledge and understanding needed to supervise production process. Further guidance is provided in the assessment evidence guide for this competency standard.

List of Tools and Equipment

- Computer system along with all accessories
- Laser Printer

List of Tools and Equipment

- Allen key set (L-key)
- Annealing furnace
- Bar code printer
- Bar code reader
- Bending dies
- Blanking dies
- Boring head
- Computer system with all accessories
- Conventional heating furnace
- Conveyor belt furnace
- Deep draw dies
- Dial Indicator with Magnet Stand
- Drilling machine with accessories (chucks, sleeves etc.)
- Drop forging machine
- Electrochemical polishing plant
- Etching machine
- Fire extinguisher
- First aid kit
- Forging dies for different product components
- Forging hammer
- Gas / Electric furnace with
- Grinding machine
- Hammers (assorted range)
- Hanging jigs (stands, hanger) for ultrasonic cleaning machine
- Heating equipment for passivation
- Hydraulic press
- Inspection gauges and measuring instruments
- Label printer

- Laser marking machine
- Lathe machine (with standard accessories)
- Machine vices
- Magnifying glass with light
- Master samples
- Marking tools (assorted range)
- Measuring instruments and gauges
- Passivation tubs
- Pedestal grinder along with cutting angle support
- Personal protective equipment (safety shoes, safety gloves, safety goggles, safety helmet and ear plugs etc.)
- Pin grinder
- Combination Plier
- Plug and snap gauges
- Polishing lathe with attachments
- Power hacksaw machine
- Hacksaw
- Power press
- Laser printer
- Projection along with screen
- Punching dies
- Punching hammer
- Punching press
- Radius gauge - concave & convex (assorted range)
- Riveting press
- Rockwell hardness tester (C)
- Sand blasting machine with accessories
- Scanner
- Screw drivers set
- Shearing press
- Shearing dies for different product

- Smoke detecting alarm
- Software packages MS Office (Word, Excel, Power Point etc.)
- Stamping dies
- Strapping machine
- Threads gauge -inches / millimeters (assorted range)
- Trimming dies for different product components
- Ultrasonic cleaning machine
- Universal milling machine with standard accessories
- Vacuum furnace
- Ventilation system for forging workshop
- Weighing scale
- Wheel grinding machine
- Work holding devices and attachments

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