

QUALIFICATION PACK – OCCUPATIONAL STANDARD FOR HEALTHCARE SECTOR SKILL COUNCIL

What are Occupational Standards(OS)?

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

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Introduction

Qualification Pack - Medical Equipment Specialist **(Electives: *Radiology/Dental/Life Support, Medical Monitoring*** ***& Operating Theatre/Laboratory & Blood*** ***Bank/Ophthalmology/Otorhinolaryngology, Speech &*** ***Audiology/Physiotherapy & Occupational*** ***Therapy/Cardiology/Neurology/Urology & Nephrology)***

SECTOR: Healthcare

SUB SECTOR: Allied health & Paramedics

OCCUPATION: Non-Direct Care

REFERENCE ID: HSS/Q5602

ALIGNED TO: NCO-2004/ 3211.0101

Brief Job Description: The individuals on the job are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of both basic clinical equipment as well as advanced high end medical equipment and their related medical device/ electronic systems used in various/all departments of healthcare facility, including appropriate documentation for all service activities and training the hospital staff.

Electives:

Elective 1- Radiology:

Medical Equipment Specialist-Radiology are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of diagnostic imaging equipment and other related medical device/ electronic systems of radiology department, including appropriate documentation for all service activities and training the hospital staff.

Elective 2- Dental:

Medical Equipment Specialist-Dental are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of dental equipment, diagnostic dental imaging equipment and other related medical device/ electronic systems of dental department, including appropriate documentation for all service activities and training the hospital staff.

Elective 3- Life Support, Medical Monitoring & Operating Theatre:

Medical Equipment Specialist- Life Support, Medical Monitoring & Operating Theatre are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of life support, medical monitoring & surgical equipment and their related medical device/ electronic systems used in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc., including appropriate documentation for all service activities and training the hospital staff.

Elective 4- Laboratory & Blood Bank:

Medical Equipment Specialist- Laboratory & Blood Bank are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of diagnostic equipment and other related medical device/ electronic systems of Laboratory & Blood Bank, including appropriate documentation for all service activities and training the hospital staff.

Elective 5- Ophthalmology:

Medical Equipment Specialist-Ophthalmology are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of medical equipment and other related medical device/ electronic systems of Ophthalmology department, including appropriate documentation for all service activities and training the hospital staff.

Elective 6- Otorhinolaryngology, Speech & Audiology:

Medical Equipment Specialist- Otorhinolaryngology, Speech & Audiology are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of medical equipment and other related medical device/

electronic systems of department of Otorhinolaryngology, Speech & Audiology, including appropriate documentation for all service activities and training the hospital staff.

Elective 7- Physiotherapy & Occupational Therapy:

Medical Equipment Specialist- Physiotherapy & Occupational Therapy are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of medical equipment and other related medical device/ electronic systems of Physiotherapy & Occupational Therapy department, including appropriate documentation for all service activities and training the hospital staff.

Elective 8- Cardiology:

Medical Equipment Specialist-Cardiology are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of medical equipment and other related medical device/ electronic systems of cardiology department, including appropriate documentation for all service activities and training the hospital staff.

Elective 9- Neurology:

Medical Equipment Specialist- Neurology are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of medical equipment and other related medical device/ electronic systems of Neurology department, including appropriate documentation for all service activities and training the hospital staff.

Elective 10- Urology & Nephrology:

Medical Equipment Specialist- Urology & Nephrology are responsible to perform inspection, installation, preventative & routine maintenance, calibration and troubleshooting and repair of medical equipment and other related medical device/ electronic systems of Urology & Nephrology department, including appropriate documentation for all service activities and training the hospital staff.

Personal Attributes: The individuals should have the ability to understand and follow complex technical instructions, ability to pay close attention to detail, ability to effectively use computer applications, familiarity with the techniques of maintaining a filing system, accuracy, dependability, meticulous, communicative, a passion for helping people, experience in medical environment and terminology. The individual should understand the specific requirements of the departmental equipment he/she is associated with. The individual should exhibit effective communication skills, dexterity, mechanical skills, physical stamina, technical skills, time-management skills and troubleshooting skills. The person must also have an elementary knowledge of the English language.

Job Details	Qualifications Pack Code	HSS/Q5602		
	Job Role	Medical Equipment Specialist		
	Credits(NSQF)	TBD	Version number	2.0
	Sector	Healthcare	Drafted on	31/5/13
	Sub-sector	Allied Health & Paramedics	Last reviewed on	14/05/17
	Occupation	Medical Equipment Specialist	Next review date	14/05/20
	NSQC Clearance on			

Job Role	Medical Equipment Specialist
Role Description	Inspects, installs, maintains, calibrate and repairs basic clinical equipment and advanced equipments used in all department of hospital.
NSQF level	7
Minimum Educational Qualifications	Diploma/B. Tech. (Biomedical Engineering) or B. Tech. (Electronics/ Communication/ Instrumentation) having optional subject in medical electronics/ instrumentation) or B.Sc. (Bio-medical Instrumentation) or NSQF certified Medical Equipment Technician-Basic after 10 years of experience
Maximum Educational Qualifications	Not Applicable
Prerequisite License or Training (Suggested but not mandatory)	Not Applicable
Minimum Job Entry Age	18 years
Experience	Not Applicable
Applicable National Occupational Standards (NOS)	<p>Compulsory</p> <ol style="list-style-type: none"> 1. HSS/ N5605: Facilitate delivery and set-up of medical equipment 2. HSS/ /N5606: Provide Technical assistance, education & Training to hospital/facility staff 3. HSS/N5607: Calibrate and carry out preventive maintenance of medical equipment 4. HSS/ N5608: Diagnose, Repair and Provide on-call and on-site assistance for equipment malfunctions 5. HSS/ N5609: Schedule and Oversee Third Party Repair and Maintenance work under guidance 6. HSS/ N5610: Manage work efficiently in professional practice of bio-medical instrumentation services 7. HSS/N5612: Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced) 8. HSS/N5613: Supervise and guide other technicians 9. HSS/ N9608: Follow radiation safety guidelines 10. HSS/ N9611: Monitor and assure quality 11. HSS/N9615: Maintain professional behavior with colleagues, patients and others 12. HSS/N9616: Maintain professional & medico-legal

	<p>conduct</p> <p>13. HSS/N9617: Maintain a safe, healthy and secure environment</p> <p>14. HSS/N9618: Follow biomedical waste disposal and infection control policies and procedures</p> <p>15. HSS/N9619: Follow equipment disposal / condemnation policies and procedures</p> <p>Elective:</p> <p>16. <u>HSS/N5614: Facilitate biomedical instrumentation services in radiology department</u></p> <p>17. <u>HSS/N5615: Facilitate biomedical instrumentation services in dental department</u></p> <p>18. <u>HSS/N5616: Facilitate biomedical instrumentation services for life support & medical monitoring equipment</u></p> <p>19. <u>HSS/N5619: Facilitate biomedical instrumentation services to surgical department</u></p> <p>20. <u>HSS/N5616: Facilitate biomedical instrumentation services to laboratory & blood bank</u></p> <p>21. <u>HSS/N5617: Facilitate biomedical instrumentation services to ophthalmology</u></p> <p>22. <u>HSS/N5618: Facilitate biomedical instrumentation services to otorhinolaryngology, speech & audiology</u></p> <p>23. <u>HSS/N5618: Facilitate biomedical instrumentation services to physiotherapy & occupational therapy</u></p> <p>24. <u>HSS/N5620: Facilitate biomedical instrumentation services to cardiology</u></p> <p>25. <u>HSS/N5618: Facilitate biomedical instrumentation services to neurology</u></p> <p>26. <u>HSS/N5619: Facilitate biomedical instrumentation services to urology & nephrology</u></p>
Performance Criteria	As described in the relevant OS units

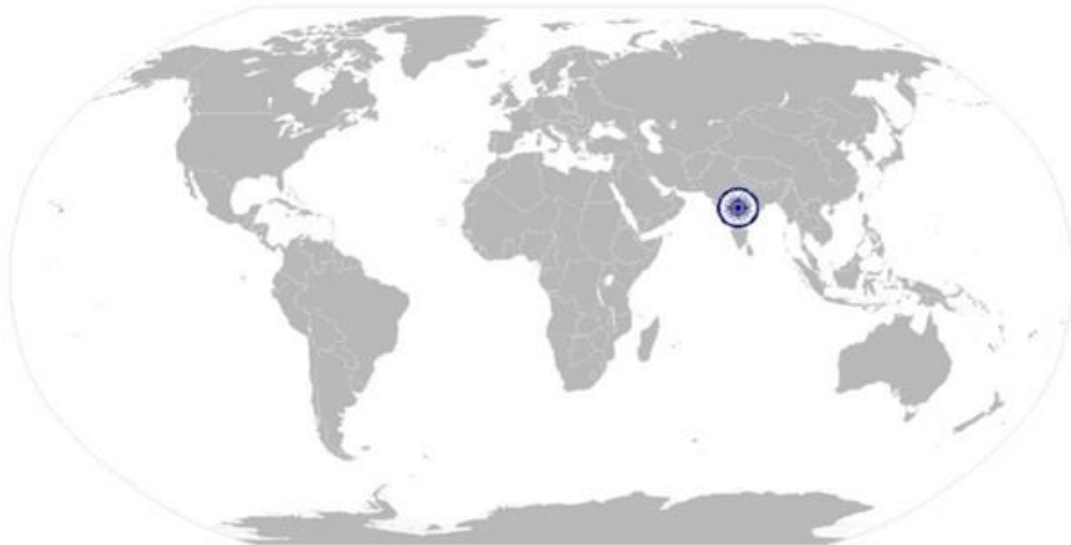
Keywords /Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are essential to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-functions	Sub-functions are sub-activities essential to fulfill the achieving the objectives of the function.
Sub-Sector	Sub-sector is derived from a further breakdown based on the

	characteristics and interests of its components.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Unit Code	Unit Code is a unique identifier for an OS unit, which can be denoted with either an 'O' or an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
X-Ray	<p>A scan that looks through tissues to examine bones, cavities and foreign objects. X-rays are a type of electromagnetic radiation, just like visible light. An x-ray machine sends individual x-ray particles through the body. The images are recorded on a computer or film.</p> <ul style="list-style-type: none"> ○ Structures that are dense (such as bone) will block most of the x- ray particles, and will appear white ○ Metal and contrast media (special dye used to highlight areas of the body) will also appear white ○ Structures containing air will be black, and muscle, fat, and fluid will appear as shades of grey
Keywords /Terms	Description
CAT	Computed Axial Tomography
CT	Computed Tomography
MRI	Magnetic Resonance Imaging
HMIS	Hospital Management Information System
IT	Information Technology
MHRD	Ministry of Human Resource Development
MLC	Medico Legal Case
NOS	National Occupational Standard(S)
NSQF	National Skills Qualifications Framework
OPD	Out-Patient Department
OS	Occupational Standard(s)
QP	Qualifications Pack
AERB	Atomic Energy Regulatory Board

HSS/N5605

Facilitate delivery and set-up of medical equipment

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to deliver and set-up medical equipment.

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Facilitate delivery and set-up of medical equipment

National Occupational Standard

Unit Code	HSS/N5605
Unit Title (Task)	Facilitate delivery and set-up of medical equipment
Description	This OS unit is about the delivery and setting-up of the required medical equipment in the concerned medical department.
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> • Perform pre-installation site visit before delivery • Receive, inspect and inventory equipment upon delivery • Deliver equipment to installation location • Help install equipment with service engineer
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Perform pre-installation site visit before delivery	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. assess the requirements of concerned department regarding necessary equipment and item(s) that are necessary to operate the equipment time to time</p> <p>PC2. assess the best of the manufacturers', suppliers and service providers consistent with the prescribing physician's order, needs, and limitations under supervision</p> <p>PC3. perform pre-installation site visit before delivery if required</p> <p>PC4. check the technical requirement by the Equipment manufacturer such as the Template, power requirement and its parameters, space of installation to allow the technicians to move freely during troubleshooting, repair and calibration if required, etc.</p> <p>PC5. ensure the technical requirement as stated by the Equipment manufacturer at installation site before delivery.</p>
Receive, inspect and inventory equipment upon delivery	<p>PC6. ensure that all required equipment and item(s) are delivered in a timely manner as agreed upon by the supplier, and prescribing physician</p> <p>PC7. ensure that all equipment and item(s) delivered to the hospital is consistent with the prescribing physician's order, needs, and limitations</p> <p>PC8. provide all equipment and item(s) that are necessary to operate the equipment</p> <p>PC9. ensure incoming inspection form properly completed</p> <p>PC10. ensure incoming inspection form data accurately entered into appropriate management systems</p> <p>PC11. ensure inspection sticker and asset/control number affixed to equipment</p> <p>PC12. maintain the inventory of the spare parts of the specific medical Equipment and ensure its proper storage, documentation and retrieval whenever necessary.</p>
Deliver equipment to installation location	<p>PC13. ensure Delivery and set up of equipment to installation location, or coordinate with hospital staff.</p> <p>PC14. ensure moving of the heavy or fragile medical equipment's to the installation site safely.</p> <p>PC15. ensure work order completion indicating proper delivery.</p> <p>PC16. ensure visual inspection conducted by supervisor .</p>

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	<p>PC17. ensure work order data accurately entered into appropriate management systems.</p> <p>PC18. ensure Completed incoming inspection form attached to work order.</p> <p>PC19. perform further adjustments as applicable.</p>
<p>Help install equipment with service engineer</p>	<p>PC20. ensure the manufacturer’s recommendation followed to avoid any risk or any technical error that may occur before installation of the equipment.</p> <p>PC21. assist company or department Engineer in Installation of the medical equipment.</p> <p>PC22. assist service Engineer in Mechanical alignment of heavy medical equipment.</p> <p>PC23. ensure Equipment is configured and performs to users’ requirements.</p> <p>PC24. assist service Engineer Or the actual user in performing the Quality Assurance (QA) tests.</p> <p>PC25. report and ensure action is taken in case of any discrepancy or variation is observed during QA tests.</p> <p>PC26. help in maintaining the records of the QA tests</p> <p>PC27. ensure dry run testing of each equipment before commissioning</p> <p>PC28. ensure Installation work order indicates electrical safety test passed and meets fire safety standards.</p> <p>PC29. ensure Work order indicates performance verification (functional) test passed successfully.</p> <p>PC30. ensure signing of Commissioning certificate by both end user and the commissioning body</p> <p>PC31. Ensure Installation is documented in management systems with all relevant checklists complete.</p>
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organization’s policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organization</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organization in order to perform the duties to meet the vision and mission of the organization</p> <p>KA6. breadth and depth of the functioning of the organization in order to choose the appropriate approaches and methods for his/her role defined in the organization</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organization.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting</p>


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Facilitate delivery and set-up of medical equipment

	<p>Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. basic structure and function of the healthcare system in the country</p> <p>KA12. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA13. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. function and operation of medical equipment of concerned department</p> <p>KB2. electrical safety standards</p> <p>KB3. proper lifting techniques</p> <p>KB4. familiarity to medical terminology</p> <p>KB5. how to check, fill and enter the related forms required during equipment set-up like inspection form, work order form, installation form, etc.</p> <p>KB6. how to assemble the equipment appropriately</p> <p>KB7. how and what to perform in Quality Assurance Tests</p> <p>KB8. how and what to do in dry run testing</p> <p>KB9. when and how the commissioning done</p> <p>KB10. standard biological precautions to be taken during delivery of equipment to installation site</p> <p>KB11. public Address alerts and codes</p> <p>KB12. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB13. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB14. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB15. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB16. basic knowledge of IT</p> <p>KB17. troubleshooting methods, contacts, and quick decision making.</p> <p>KB18. network protocols</p> <p>KB19. medical device integration</p> <p>KB20. maintenance of the service Manuals and circuit diagrams</p>

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Facilitate delivery and set-up of medical equipment

	<p>KB21. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB22. the Mechanical knowledge and proper use of tools to perform the activities like</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems 
Skills (S)	
A. Core Skills / Generic Skill	Writing Skills
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organized manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information

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Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions SB3. prioritize the necessary actions
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB4. develop specific goals and plans to prioritise, organize, and accomplish work
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

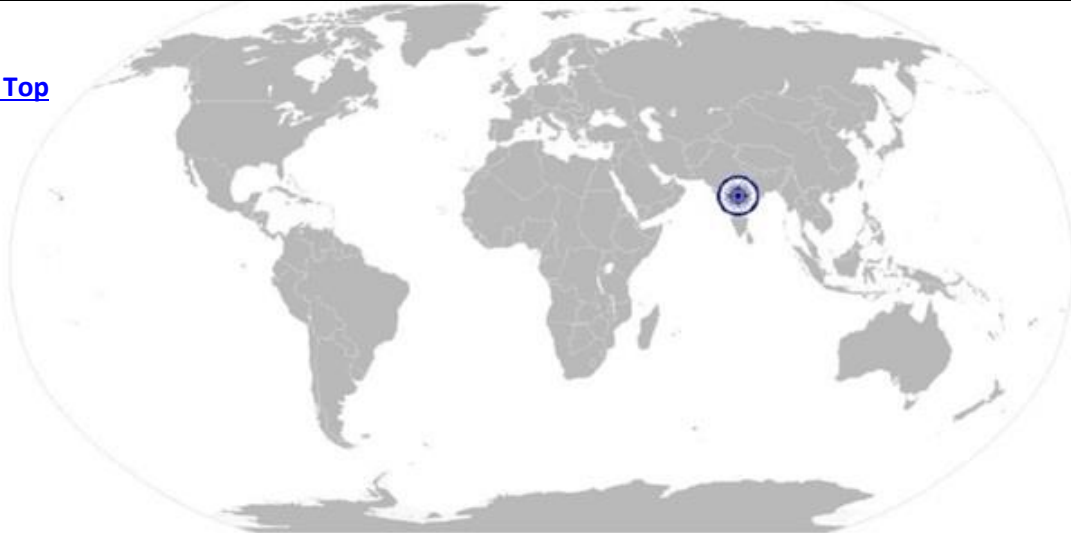
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NOS Version Control

NOS Code	HSS/N5605		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	31/05/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Medical Equipment Specialist	Next review date	14/05/2020

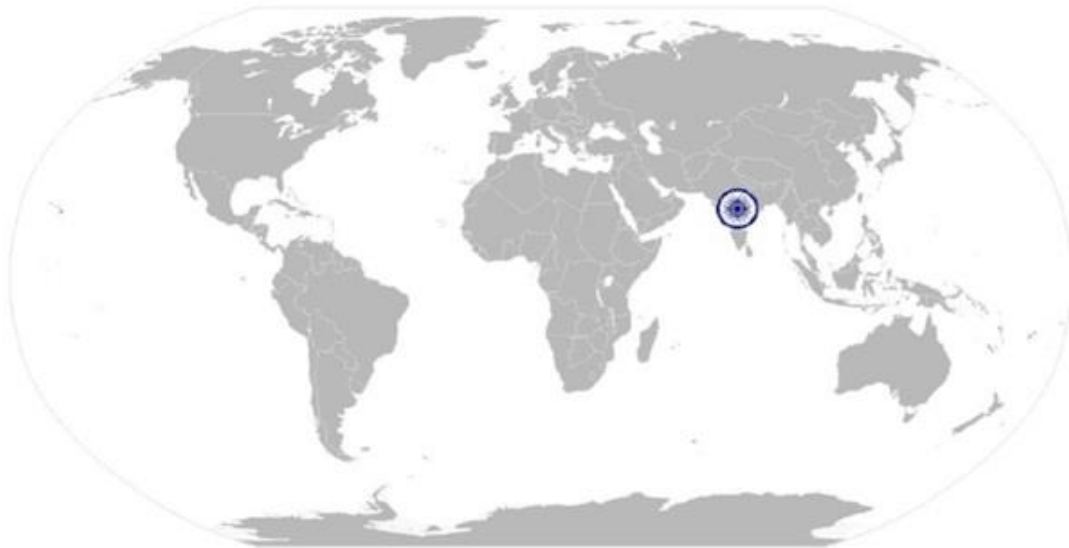
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HSS/N5606

Provide technical assistance, education & training to hospital/facility staff

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to provide technical assistance, education & training to hospital/facility staff on proper safety and utilization of medical equipment.

HSS/N5606

Provide technical assistance, education & training to hospital/facility staff

National Occupational Standard

Unit Code	HSS/N5606
Unit Title (Task)	Provide technical assistance, education & training to hospital/facility staff
Description	This OS unit is about providing technical assistance and Instruction to the hospital staff on the installed medical equipment operation and maintenance safely and correctly.
Scope	This unit/task covers the following tasks: <ul style="list-style-type: none"> • Demonstrate equipment for facility staff • Respond to user requests for assistance • Identify need for in-service presentations
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Demonstrate equipment for facility staff	To be competent, the user/individual on the job must be able to: <p>PC1. provide, or coordinate the provision of, appropriate information related to the set-up, features, routine use, trouble shooting, cleaning, and maintenance of all equipment provided based on manufacturer documentation or checklist</p> <p>PC2. provide relevant information and/or instructions about infection control issues related to the use of all equipment provided</p> <p>PC3. set up apparatus for experimental, demonstration or other purposes.</p> <p>PC4. ensure that the hospital staff can use all equipment provided safely and effectively</p> <p>PC5. ensure that training and instructions provided to the hospital staff shall commensurate with the risks, complexity, and manufacturer's instructions and/or specifications for the equipment</p> <p>PC6. document all training and communication in the providers record, including the date, time, and signature of the person providing the service</p> <p>PC7. ensure participant sign-in sheet verified by supervisor</p> <p>PC8. document all favorable facility staff feedback received during supervisor rounds (zone inspection rounds)</p>
Respond to user requests for assistance	PC9. assess response requirement given by facility staff properly time to time PC10. respond to assistance request according to its priority
Identify need for in-service presentations	PC11. identify trends of clinical errors and offers relevant in-service instruction to staff as approved PC12. facilitate interdepartmental cooperation in compliance with set guidelines
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and processes)	The user/individual on the job needs to know and understand: <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organization's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organization</p>

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	<p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organization in order to perform the duties to meet the vision and mission of the organization</p> <p>KA6. breadth and depth of the functioning of the organization in order to choose the appropriate approaches and methods for his/her role defined in the organization</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organization.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. basic structure and function of the healthcare system in the country</p> <p>KA12. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA13. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. function and operation of medical equipment of concerned department</p> <p>KB2. electrical safety standards</p> <p>KB3. proper lifting techniques</p> <p>KB4. familiarity to medical terminology</p> <p>KB5. how to document all training and communication in the providers record, participant sign-in sheet verified by supervisor, all favorable facility staff feedback received during supervisor rounds, etc.</p> <p>KB6. tailor training and instruction materials and approaches to the needs, abilities, learning preferences, and language of the concerned hospital related to the set-up, features, routine use, trouble shooting, cleaning, and maintenance of all equipment provided based on manufacturer documentation or checklist</p> <p>KB7. how to provide written instructions to the hospital staff for equipment</p> <p>KB8. how to assess and document that the instructions were received and understood by facility staff and they can use the equipment safely</p> <p>KB9. how to assess response requirements of facility staff, identify clinical errors and respond adequately on priority basis.</p> <p>KB10. the set guidelines for interdepartmental cooperation</p> <p>KB11. standard biological precautions to be taken during demonstration of operation of equipment</p>

HSS/N5606 Provide technical assistance, education & training to hospital/facility staff

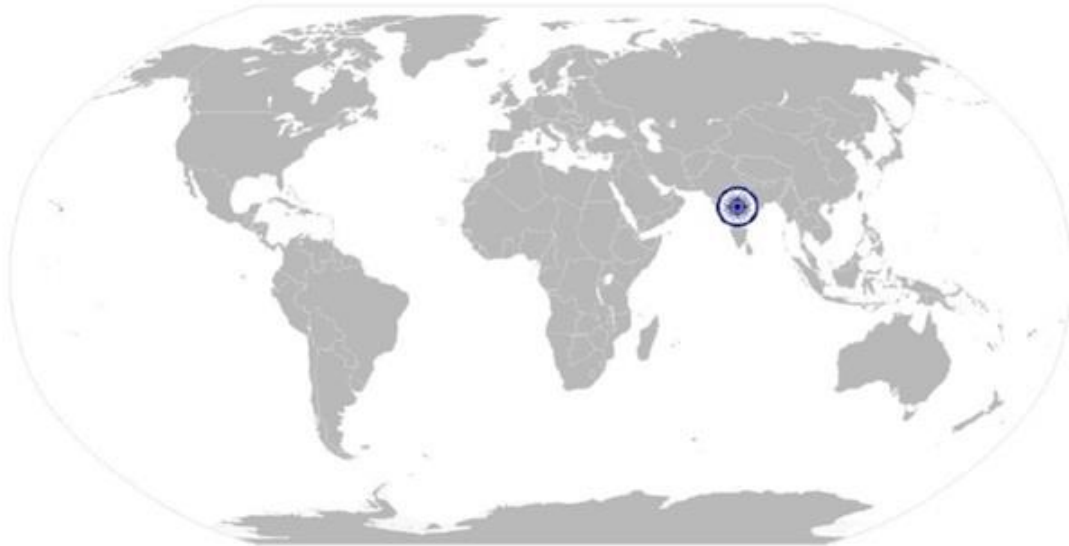
	<p>KB12. public Address alerts and codes</p> <p>KB13. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB14. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB15. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB16. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB17. basic knowledge of IT</p> <p>KB18. troubleshooting methods, contacts, and quick decision making.</p> <p>KB19. network protocols</p> <p>KB20. medical device integration</p> <p>KB21. maintenance of the service Manuals and circuit diagrams</p> <p>KB22. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB23. the Mechanical knowledge and proper use of tools to perform the activities like</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems <p>KB24. basic structure and function of the body system and associated component</p>
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	<p>KB25. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
<p>A. Core Skills / Generic Skills</p>	<p>Writing Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. use effective written communication protocols</p> <p>SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organized manner</p> <p>SA3. produce written information, which may include technical material, that is appropriate for the intended audience</p>
	<p>Reading Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables</p>
<p>B. Professional Skills</p>	<p>Oral Communication (Listening and Speaking Skills)</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude</p> <p>SA6. seek out and listen to colleagues and other health professionals</p> <p>SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information</p>
	<p>Decision Making</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. make sound, well-informed, and objective decisions</p> <p>SB2. perceive the impact and implications of decisions</p> <p>SB3. prioritize the necessary actions</p>
	<p>Plan and Organize</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB4. develop specific goals and plans to prioritise, organize, and accomplish work</p>
	<p>Customer Centricity</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government)</p> <p>SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services</p>

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	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations

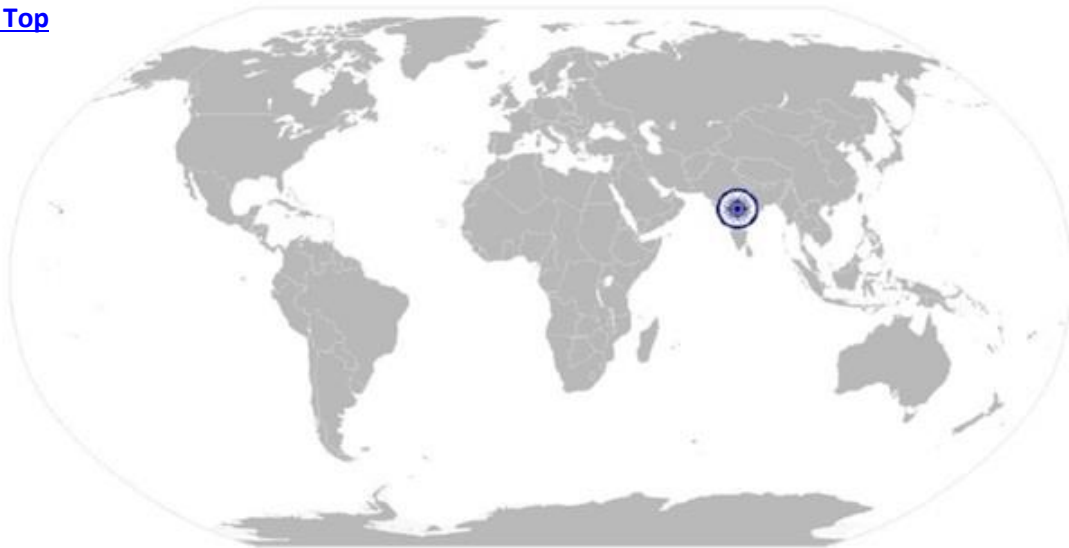


HSS/N5606 Provide technical assistance, education & training to hospital/facility staff

NOS Version Control

NOS Code	HSS/5606		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	31/07/2015
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Medical Equipment Specialist	Next review date	14/05/2020

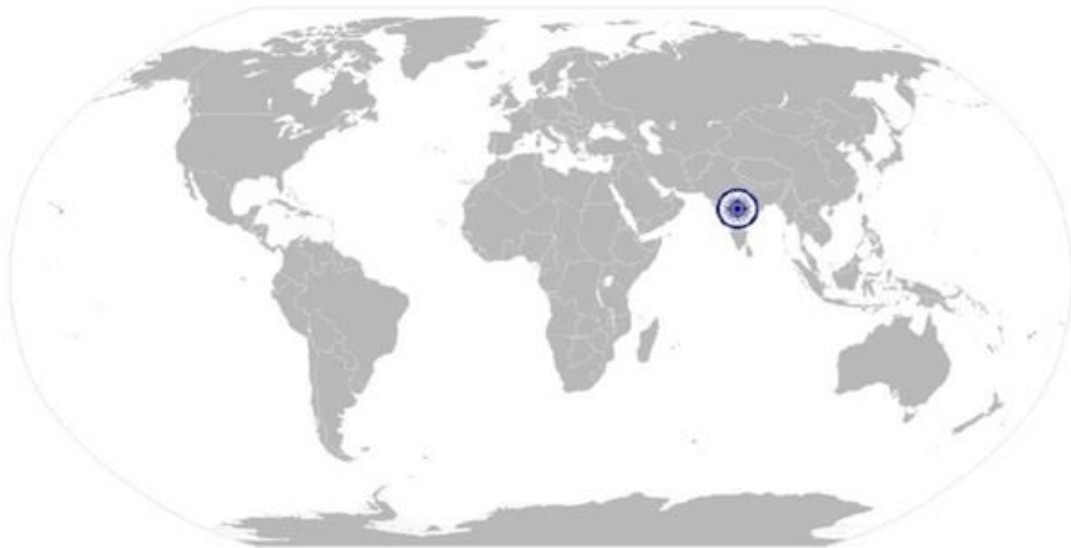
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HSS/N5607

Calibrate and carry out preventive maintenance of medical equipment

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to calibrate and carry out equipment preventive maintenance.

HSS/N5607 Calibrate and carry out preventive maintenance of medical equipment

National Occupational Standard

Unit Code	HSS/N5607
Unit Title (Task)	Calibrate and carry out preventive maintenance of medical equipment
Description	This OS unit is about the MET to calibrate and help in equipment maintenance.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Calibrate equipment • Conduct scheduled preventive maintenance • Order parts and supplies • Respond to device alerts and recalls • Conduct rounds
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Calibrate equipment	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. test and calibrate parts and equipment according to the manufacturer's recommendations, study protocols</p> <p>PC2. ensure calibration task is complete within specified departmental time period or manufacturer's recommendations</p> <p>PC3. ensure the sticker/s or tag conforming the calibration done is affixed and current</p> <p>PC4. maintain calibration record for the equipment</p> <p>PC5. maintain the Calibration sheet for inspection by the regulatory authorities and other relevant authorities</p>
Conduct scheduled preventive maintenance	<p>PC6. conduct Periodic Preventive Maintenance of each equipment as per scheduled program or required standard frequency</p> <p>PC7. ensure all the toolkits required are available on site on the day maintenance</p> <p>PC8. prepare the maintenance checklist</p> <p>PC9. ensure documents attached to closed Preventive Maintenance work order indicates successfully passing of electrical safety test, performance verification (functional) test and equipment operating within range of manufacturer specifications</p> <p>PC10. ensure the sticker/s or tag conforming the Preventive Maintenance done is affixed and current.</p> <p>PC11. ensure Preventive Maintenance task is complete within specified departmental time period</p> <p>PC12. record the periodic Preventive Maintenance reports and forward it to the seniors for verification.</p> <p>PC13. maintain software application for medical equipment having computerized operation</p>
Order parts and supplies	<p>PC14. identify correctly the replacement part on order documentation</p> <p>PC15. ensure parts are ordered from approved vendor/manufacturer</p> <p>PC16. ensure parts accurately documented in maintenance management systems as per organizational policy.</p> <p>PC17. ensure parts ordered with respect to priority of repair</p>
Respond to device alerts and recalls	<p>PC18. ensure sufficient supply replacements ordered to complete device recall</p> <p>PC19. ensure defective or recalled part(s) returned as required according to</p>

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	<p>recall instructions</p> <p>PC20. ensure Return documentation completed with all require data including serial numbers, model numbers, etc., according to recall instructions</p>
Conduct rounds	<p>PC21. ensure assigned department is visited as required by supervisor preference</p> <p>PC22. ensure work Order reflects completion of rounds</p> <p>PC23. document all favorable facility staff feedback received during supervisor rounds (zone inspection rounds)</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organization’s policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organization</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organization in order to perform the duties to meet the vision and mission of the organization</p> <p>KA6. breadth and depth of the functioning of the organization in order to choose the appropriate approaches and methods for his/her role defined in the organization</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organization.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. basic structure and function of the healthcare system in the country</p> <p>KA12. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA13. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. function and operation of medical equipment of concerned department</p> <p>KB2. electrical safety standards</p> <p>KB3. proper lifting techniques</p> <p>KB4. familiarity to medical terminology</p> <p>KB5. how to test the equipment</p>

HSS/N5607

Calibrate and carry out preventive maintenance of medical equipment

	<p>KB6. how to calibrate the equipment</p> <p>KB7. how to record calibration on relevant sheet</p> <p>KB8. how to review technical manuals and regularly attend training sessions</p> <p>KB9. how to conduct, record and take necessary action during preventive maintenance</p> <p>KB10. software application for medical equipment having computerized operation</p> <p>KB11. how to prepare maintenance checklist (such as: Power cable, power module, functional check, calibration if required using the electrical safety analyser, etc.)</p> <p>KB12. how to maintain orders, supplies and returns of parts or equipment through approved vendors or manufacturers</p> <p>KB13. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB14. knowledge of cleaning of all assemblies and checking of quantity and quality machine Oil and distilled water in Medical Equipment's.</p> <p>KB15. oiling or greasing of the mechanical moving parts.</p> <p>KB16. standard biological precautions to be taken during calibration and preventive maintenance of equipment</p> <p>KB17. public Address alerts and codes</p> <p>KB18. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB21. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB22. basic knowledge of IT</p> <p>KB23. troubleshooting methods, contacts, and quick decision making.</p> <p>KB24. network protocols</p> <p>KB25. medical device integration</p> <p>KB26. maintenance of the service Manuals and circuit diagrams</p> <p>KB27. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB28. the Mechanical knowledge and proper use of tools to perform the activities like</p> <ul style="list-style-type: none"> ● defibrillator analyzer ● hand tools ● non-invasive blood pressure (NIBP) analyzer ● tachometer ● spectrum analyzer
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	<ul style="list-style-type: none"> • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems <p>KB29. basic structure and function of the body system and associated component</p> <p>KB30. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA1. use effective written communication protocols
	SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organized manner
	SA3. produce written information, which may include technical material, that is appropriate for the intended audience
Reading Skills	
The user/ individual on the job needs to know and understand how to:	
SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables	
Oral Communication (Listening and Speaking skills)	
The user/ individual on the job needs to know and understand how to:	
SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude	
SA6. seek out and listen to colleagues and other health professionals	
SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information	

HSS/N5607 Calibrate and carry out preventive maintenance of medical equipment

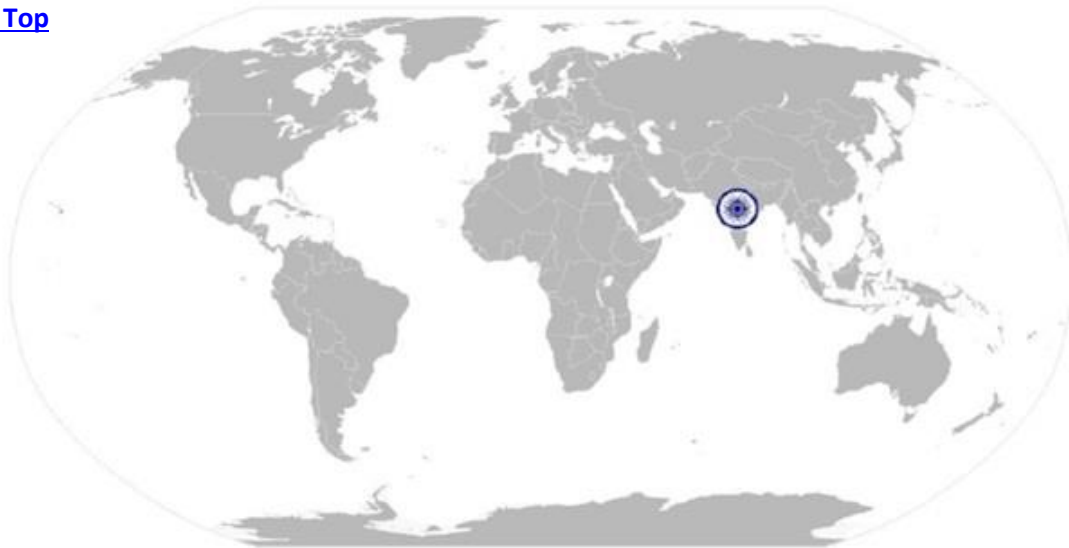
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions SB3. prioritize the necessary actions
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB4. develop specific goals and plans to prioritise, organize, and accomplish work
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

HSS/N5607 Calibrate and carry out preventive maintenance of medical equipment

NOS Version Control

NOS Code	HSS/N5607		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/2015
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Medical Equipment Specialist	Next review date	14/05/2020

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HSS/N5608 Diagnose, repair and provide on-call and on-site assistance for equipment malfunctions

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to provide on-call and on site assistance.

HSS/N5608 Diagnose, repair and provide on-call and on-site assistance for equipment malfunctions

National Occupational Standard

Unit Code	HSS/N5608
Unit Title (Task)	Diagnose, Repair and Provide on-call and on-site assistance for equipment malfunctions
Description	This OS unit is about providing on-call and onsite assistance for repairing the medical equipment.
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> • On-Call Respond to device failures reported by users • Diagnose equipment malfunctions on-site • Order parts and supplies • Repair faults and calibrate equipment • Return equipment to service • Conduct Rounds
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
On-Call Respond to device failures reported by users	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. acknowledge notification from dispatcher within required departmental time frames</p> <p>PC2. respond to work order according to the assigned priority</p> <p>PC3. close with call initiator to determine the malfunction symptom</p> <p>PC4. ensure call initiators indicate favourable technician responses for example, from customer satisfaction surveys</p> <p>PC5. provide on call assistance by giving technical assistance and instructions to hospital staff regarding the fault if applicable</p>
Diagnose equipment malfunctions on-site	<p>PC6. diagnose and correct system and equipment malfunctions if fault is there</p> <p>PC7. test, evaluate, and classify excess or in-use medical equipment and determine serviceability, condition, and disposition, in accordance with regulations</p> <p>PC8. examine medical equipment or facility's structural environment and check for proper use of equipment to protect patients and staff from electrical or mechanical hazards and to ensure compliance with safety regulations</p> <p>PC9. study technical manuals or attend training sessions provided by equipment manufacturers to refer or maintain current knowledge</p> <p>PC10. exercise efficient use of available, reliable resources, i.e., senior technicians, manufacturer technical support, etc.</p> <p>PC11. use appropriate diagnostic tools to determine the problem</p>
Order parts and supplies	<p>PC12. identify correctly the replacement part on order documentation</p> <p>PC13. ensure parts are ordered from approved vendor/manufacturer</p> <p>PC14. ensure parts accurately documented in maintenance management systems as per organizational policy.</p> <p>PC15. ensure parts ordered with respect to priority of repair</p>
Repair faults and calibrate equipment	<p>PC16. provide technical assistance and instructions to hospital staff regarding the fault if applicable</p> <p>PC17. repair the equipment by following procedures from the appropriate</p>

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	<p>manufacturer service manual</p> <p>PC18. use appropriate tools to facilitate repair</p> <p>PC19. performance verification and/or calibration complete to manufacturer specification</p> <p>PC20. ensure the sticker/s or tag conforming the calibration done is affixed and current</p> <p>PC21. maintain calibration record for the equipment</p> <p>PC22. maintain the Calibration sheet for inspection by the regulatory authorities and other relevant authorities</p> <p>PC23. explain or demonstrate correct operation or preventive maintenance of medical equipment to personnel.</p>
<p>Return equipment to service</p>	<p>PC24. ensure final operational check performed per manufacturer specification</p> <p>PC25. ensure electrical safety test complete as per regulations and/or facility requirements</p> <p>PC26. ensure equipment returned to unit or facility</p> <p>PC27. close work order with call initiator and/or appropriate leadership</p> <p>PC28. ensure work Order closed out includes original complaint, technician diagnosis, actual repair of the equipment, and supporting documentation</p>
<p>Conduct rounds</p>	<p>PC29. ensure assigned department is visited as required by supervisor preference</p> <p>PC30. ensure work Order reflects completion of rounds</p> <p>PC31. document all favorable facility staff feedback received during supervisor rounds (zone inspection rounds)</p>
<p>Knowledge and Understanding (K)</p>	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organization's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organization</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organization in order to perform the duties to meet the vision and mission of the organization</p> <p>KA6. breadth and depth of the functioning of the organization in order to choose the appropriate approaches and methods for his/her role defined in the organization</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organization.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting</p>

HSS/N5608 Diagnose, repair and provide on-call and on-site assistance for equipment malfunctions

	<p>Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. basic structure and function of the healthcare system in the country</p> <p>KA12. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA13. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. function and operation of medical equipment of concerned department</p> <p>KB2. electrical safety standards</p> <p>KB3. proper lifting techniques</p> <p>KB4. familiarity to medical terminology</p> <p>KB5. how to test, evaluate, and classify excess or in-use medical equipment and determine serviceability, condition, and disposition, in accordance with regulations</p> <p>KB6. knowledge of types of main disconnect</p> <p>KB7. knowledge of remedial measures for common main disconnect problems</p> <p>KB8. knowledge of disconnect and service panel capacities (60, 100, 200 AMP, etc.)</p> <p>KB9. how to identify disconnects and service panel capacity</p> <p>KB10. how to identify whether the fault needs self-correction or not</p> <p>KB11. how to correct the particular fault</p> <p>KB12. how to provide on call assistance</p> <p>KB13. how to correlate the existing fault with the training provided</p> <p>KB14. how to repair medical equipment sometimes when it is being used on the patient so he must take great care to ensure that repairs do not disturb patients</p> <p>KB15. how to open the motor, rectify and repair of fault</p> <p>KB16. knowledge of winding of motor, rating of motor and etc.</p> <p>KB17. how to fit or refit the motor or pumps in heavy machines with proper alignment.</p> <p>KB18. how to open the motherboard, able to check the circuit and repair the fault.</p> <p>KB19. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB20. public address alerts and codes</p> <p>KB21. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical</p>

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	<p>Instrumentation.</p> <p>KB22. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB23. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB24. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB25. basic knowledge of IT</p> <p>KB26. troubleshooting methods, contacts, and quick decision making.</p> <p>KB27. network protocols</p> <p>KB28. medical device integration</p> <p>KB29. maintenance of the service Manuals and circuit diagrams</p> <p>KB30. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB31. the Mechanical knowledge and proper use of tools to perform the activities like</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems <p>KB32. basic structure and function of the body system and associated component</p> <p>KB33. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid &
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HSS/N5608 Diagnose, repair and provide on-call and on-site assistance for equipment malfunctions

	<p>electrolyte balance, elimination of body wastes, maintenance of blood pressure</p> <ul style="list-style-type: none"> • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organized manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organize, and accomplish work SB4. prioritize the necessary actions
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures	

HSS/N5608 Diagnose, repair and provide on-call and on-site assistance for equipment malfunctions

	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations



HSS/N5608 Diagnose, repair and provide on-call and on-site assistance for equipment malfunctions

NOS Version Control

NOS Code	HSS/N5608		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Medical Equipment Specialist	Next review date	14/05/2020

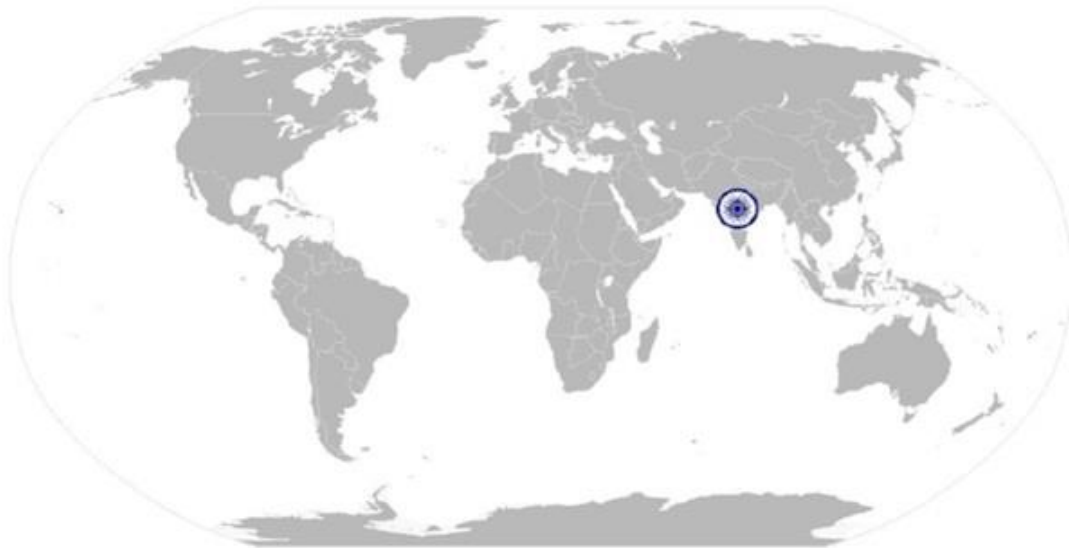
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HSS/N5609

Schedule and oversee third party repair and maintenance work

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to schedule and oversee third party repair and maintenance work.

HSS/N5609 Schedule and oversee third party repair and maintenance work

National Occupational Standard

Unit Code	HSS/N5609
Unit Title (Task)	Schedule and Oversee Third Party Repair and Maintenance work
Description	This OS unit is about scheduling and overseeing Third Party Repair and Maintenance work
Scope	This unit/task covers the following tasks: <ul style="list-style-type: none"> • Coordinate resources to facilitate repairs • Conduct quality assurance check of third party repairs • Verify third party documentation of repairs
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Coordinate resources to facilitate repairs	To be competent, the user/individual on the job must be able to: <p>PC1. identify the equipment malfunction/maintenance which needs to be addressed through third party vendor</p> <p>PC2. identify vendor and verify that vendor contract is valid</p> <p>PC3. prioritize the repair/maintenance time frame properly</p> <p>PC4. ensure repair/maintenance priority and time frame accurately been communicated to third party vendor</p>
Conduct quality assurance check of third party repairs	<p>PC5. ensure equipment repaired/part replaced/ maintenance done by third party is configured and performs to users' requirements</p> <p>PC6. ensure Performance verification and/or calibration complete to manufacturer specification</p> <p>PC7. ensure final operational check performed per manufacturer specification</p> <p>PC8. ensure electrical safety test complete as per regulations and/or facility requirements</p> <p>PC9. ensure equipment returned to unit or facility</p> <p>PC10. close work order with call initiator, third party and/or appropriate leadership</p>
Verify third party documentation of repairs	<p>PC11. ensure the sticker/s or tag conforming the calibration done is affixed and current</p> <p>PC12. maintain calibration record for the equipment</p> <p>PC13. maintain the calibration sheet for inspection by the regulatory authorities and other relevant authorities</p> <p>PC14. ensure work order closed out includes original complaint, technician diagnosis, actual repair of the equipment, third party interface, replaced part and supporting documentation</p> <p>PC15. ensure work order indicates installation or repairs by third party meet electrical safety standards</p> <p>PC16. ensure work order indicates performance verification (functional) test passed successfully</p> <p>PC17. ensure third party has provided full documentation of completed work for technician input into facility maintenance management system with all relevant checklists complete</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the	The user/individual on the job needs to know and understand: <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p>

HSS/N5609 Schedule and oversee third party repair and maintenance work

<p>company / organization and its processes)</p>	<p>KA2. follows established protocols as defined in organization's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organization</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organization in order to perform the duties to meet the vision and mission of the organization</p> <p>KA6. breadth and depth of the functioning of the organization in order to choose the appropriate approaches and methods for his/her role defined in the organization</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organization.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. basic structure and function of the healthcare system in the country</p> <p>KA12. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA13. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. function and operation of medical equipment of concerned department</p> <p>KB2. electrical safety standards</p> <p>KB3. proper lifting techniques</p> <p>KB4. familiarity to medical terminology</p> <p>KB5. how to check, fill and enter the related forms required during equipment set-up like inspection form, work order form, installation form, etc.</p> <p>KB6. how to assemble the equipment appropriately</p> <p>KB7. how and what to perform in Quality Assurance Tests</p> <p>KB8. how and what to do in dry run testing</p> <p>KB9. when and how the commissioning done</p> <p>KB10. standard biological precautions to be taken during delivery of equipment to installation site</p> <p>KB11. public Address alerts and codes</p> <p>KB12. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical</p>

HSS/N5609 Schedule and oversee third party repair and maintenance work

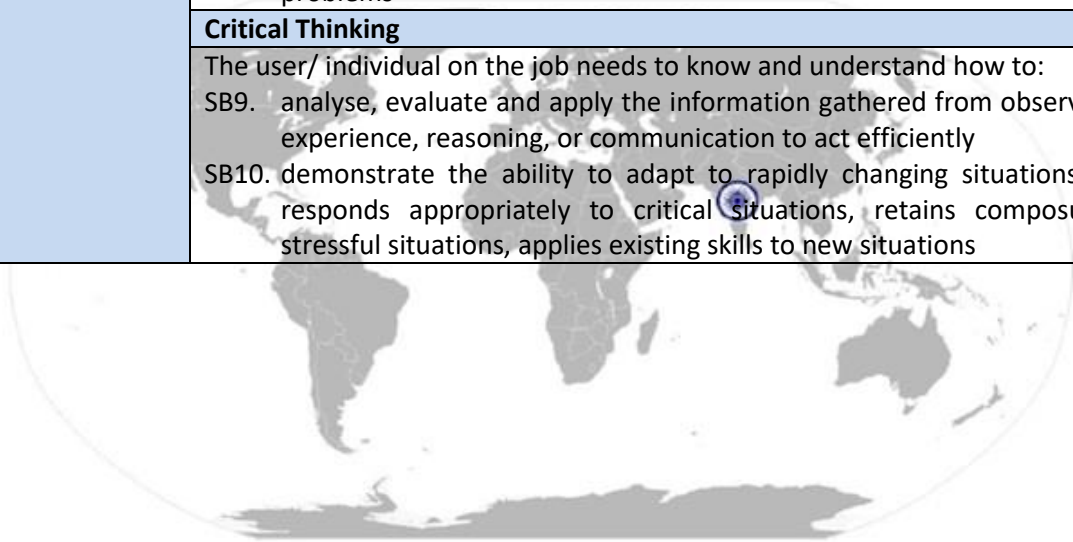
	<p>Instrumentation.</p> <p>KB13. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB14. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB15. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB16. basic knowledge of IT</p> <p>KB17. troubleshooting methods, contacts, and quick decision making.</p> <p>KB18. network protocols</p> <p>KB19. medical device integration</p> <p>KB20. maintenance of the service Manuals and circuit diagrams</p> <p>KB21. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB22. the Mechanical knowledge and proper use of tools to perform the activities like</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems <p>KB23. basic structure and function of the body system and associated component including –</p> <ul style="list-style-type: none"> • cells, tissue & organ • cardiovascular system • respiratory System • musculoskeletal system
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	<ul style="list-style-type: none"> • endocrine system • digestive system • urinary system • reproductive system • integumentary system • lymphatic system • nervous system including sensory system- Eye & ears • special senses – smell, taste, visual and equilibrium & Hearing • immune system <p>KB24. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organized manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
B. Professional Skills	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information
	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions
Plan and Organize	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organize, and accomplish work SB4. prioritize the necessary actions

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	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems	
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

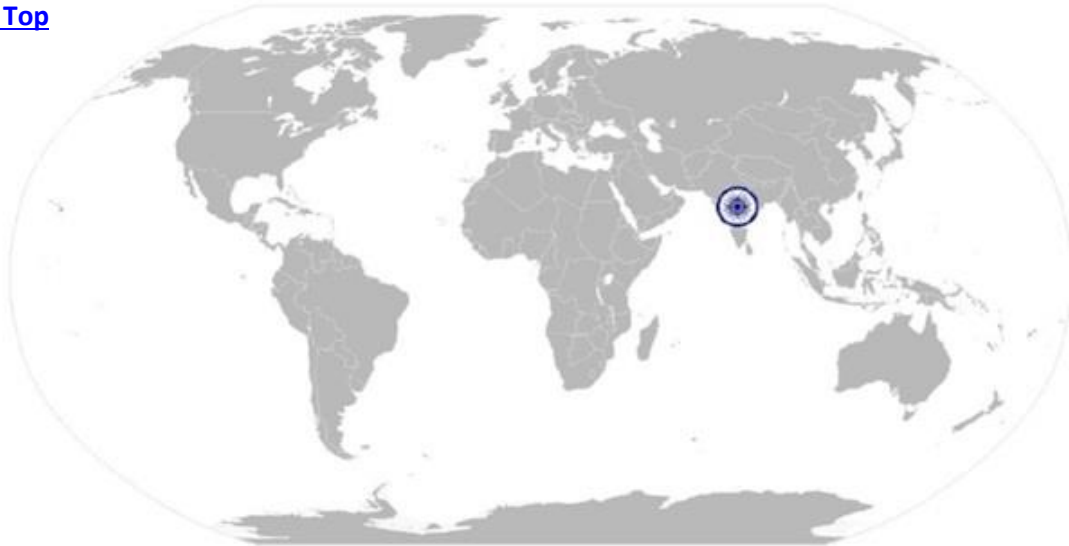


HSS/N5609 Schedule and oversee third party repair and maintenance work

NOS Version Control

NOS Code	MEP/N5609		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Medical Equipment Specialist	Next review date	14/05/2020

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HSS/N5610

Manage work efficiently in professional practice of bio-medical
instrumentation services

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to manage work efficiently in professional practice of bio-medical instrumentation services in terms of inventory, supplies, documentation & personal attributes.

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Manage work efficiently in professional practice of bio-medical instrumentation services

National Occupational Standard

Unit Code	HSS/N5610
Unit Title (Task)	Manage work efficiently in professional practice of bio-medical instrumentation services
Description	This OS unit is about managing work efficiently in professional practice of bio-medical instrumentation services in terms of inventory, supplies, documentation & personal attributes
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> • Maintain equipment, parts, and inventory database • Assist with equipment recalls and health device alerts (HDAs) • Update equipment maintenance documentation • Acquire the qualities of managing their job
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Maintain equipment, parts, and inventory database	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure documents justification of necessity for parts stock and quantity</p> <p>PC2. ensure Maintenance Management System reflects actual inventory levels of parts and equipment</p> <p>PC3. ensure proper condemnation of equipment which are out-dated or in non-working condition.</p>
Assist with equipment recalls and health device alerts (HDAs)	<p>PC4. return documentation complete with all required data including service numbers, model numbers, etc., according to recall instructions</p> <p>PC5. ensure action is annotated within Maintenance Management System according to departmental policy</p>
Update equipment maintenance documentation	<p>PC6. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC7. ensure management reports reflect all appropriate equipment histories</p>
Acquire the qualities of managing their job	<p>PC8. able to complete assigned job timely, efficiently and in desirous manner.</p> <p>PC9. work within organizational systems and requirements as appropriate to the role</p> <p>PC10. able to work as an individual and as a team member at all times in cooperation with others.</p> <p>PC11. able to keep emotions in check and stay cool under pressure esp. while dealing with medical equipment as it may be life-threatening.</p> <p>PC12. aware of personal abilities and limitations and share work load as required.</p> <p>PC13. able to handle challenging situations and make decisions based on applicable regulations and codes of conduct when possible conflicts</p>

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Manage work efficiently in professional practice of bio-medical instrumentation services

	<p>arise.</p> <p>PC14. keep updated with the latest knowledge by reading internal communications and legal framework changes related to roles and responsibilities.</p> <p>PC15. communicate and discuss work flow, problems faced, possible solutions and pass on the learning within and outside the team</p> <p>PC16. maintain Good etiquette, good personal hygiene and proper grooming.</p> <p>PC17. follow the rules, regulations and code of ethics laid down by national/international regulatory authorities, department, organization.</p> <p>PC18. be punctual and attend any service call in time and be ready to work for extra hours.</p> <p>PC19. exhibit good & comprehensive listening, communication, writing & management skills esp. during interdepartmental communications, customer interaction/communication, sales, marketing, support, service, etc.</p> <p>PC20. able to understand customer needs and be able to communicate same to seniors.</p> <p>PC21. able to involve oneself in policy and decision making.</p> <p>PC22. ready to work during odd hours in case of any urgency or emergency.</p> <p>PC23. exhibit professional approach with strength, talent, resources, initiative, faith & effort.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the Healthcare provider/ Organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organization’s policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organization</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organization in order to perform the duties to meet the vision and mission of the organization</p> <p>KA6. breadth and depth of the functioning of the organization in order to choose the appropriate approaches and methods for his/her role defined in the organization</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organization.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian</p>


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Manage work efficiently in professional practice of bio-medical instrumentation services

	<p>Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. basic structure and function of the healthcare system in the country</p> <p>KA12. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA13. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. function and operation of medical equipment of concerned department</p> <p>KB2. electrical safety standards</p> <p>KB3. proper lifting techniques</p> <p>KB4. familiarity to medical terminology</p> <p>KB5. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB6. what are the various types of inventory, supplies & documents to be maintained & managed.</p> <p>KB7. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB8. how and when to escalate problems to the next level for support</p> <p>KB9. review the manufacturer’s recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB10. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB11. public Address alerts and codes</p> <p>KB12. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB13. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB14. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB15. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB16. basic knowledge of IT</p> <p>KB17. troubleshooting methods, contacts, and quick decision making.</p> <p>KB18. network protocols</p> <p>KB19. medical device integration</p> <p>KB20. maintenance of the service Manuals and circuit diagrams</p>

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Manage work efficiently in professional practice of bio-medical instrumentation services

	<p>KB21. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB22. the Mechanical knowledge and proper use of tools to perform the activities like</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems 
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organized manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information

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Manage work efficiently in professional practice of bio-medical instrumentation services

B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organize, and accomplish work SB4. prioritize the necessary actions
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

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Manage work efficiently in professional practice of bio-medical instrumentation services

NOS Version Control

NOS Code	HSS/N5610		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Medical Equipment Specialist	Next review date	14/05/2020

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HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to facilitate Biomedical Instrumentation Services for basic clinical equipment.

HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

National Occupational Standard

Unit Code	HSS/N5612
Unit Title (Task)	Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)
Description	This OS unit is about facilitating Biomedical Instrumentation Services for basic clinical equipment.
Scope	<p>The unit/task covers the following:</p> <ul style="list-style-type: none"> • Plan the set-up of the basic clinical equipment in terms of bio-medical instrumentation services • Special Attention to Regulatory/other Requirements specific to basic clinical equipment • Provide Bio-medical Instrumentation Services for basic clinical equipment
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the basic clinical equipment in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.</p> <p>PC3. plan the bio-medical instrumentation set-up of the basic clinical equipment as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation for the basic clinical equipment in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of the basic clinical equipment as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of the basic clinical equipment indicating the deliverables, timelines, requisites &</p>

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	involved personnel.
Special Attention to Regulatory/ other Requirements specific basic clinical equipment	<p>PC8. comply the regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the basic clinical equipment.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, mercury and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of the basic clinical equipment.</p> <p>PC11. ensure proper documentation in accordance of special regulations for the basic clinical equipment.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
Provide Bio-medical Instrumentation Services for basic clinical equipment	<p>PC13. co-ordinate delivery, Installation and set-up of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff related to operations and use of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.</p> <p>PC16. train, educate and assess the staff related to operations and use of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc. time to time.</p> <p>PC17. ensure staff could handle & operate the basic clinical equipment safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the basic clinical equipment time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the basic medical equipment whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations for related to the basic clinical equipment installations</p> <p>PC23. provide information on mercury related hazards and control measures to others in the workplace.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, mercury and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations,</p>

HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

	<p>manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of the basic clinical equipment during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation’s policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the basic clinical equipment.</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.; like: BP instrument, thermometer, glucometer, stethoscope, scales, bariatric equipment, recliners, stretcher, wheel chair, hospital beds, screens, IV stand, cardiac table, foot-step, patient bell, nurses alarm, trolley, air bed, water mattress, dressing drums, filters, needle destroyer, sharps container, re-usable tubs, etc.</p>

HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

	<p>KB2. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, mercury and other possible exposures during operation of all possible basic clinical equipment.</p> <p>KB3. what and how to do risk assessment and control of PPE program in context of the basic clinical equipment.</p> <p>KB4. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of equipment all possible basic clinical equipment required in various/all departments, vis. OPD, IPD, Diagnostic, Surgical, Emergency, etc.</p> <p>KB5. electrical safety standards</p> <p>KB6. mercury Safety Standards</p> <p>KB7. proper lifting techniques</p> <p>KB8. familiarity to basic medical terminology</p> <p>KB9. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB10. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB11. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB12. how and when to escalate problems to the next level for support</p> <p>KB13. review the manufacturer's recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB14. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB15. public Address alerts and codes</p> <p>KB16. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB17. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB18. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB20. basic knowledge of IT</p> <p>KB21. troubleshooting methods, contacts, and quick decision making.</p> <p>KB22. network protocols</p> <p>KB23. medical device integration</p> <p>KB24. how & when to provide maintenance as per the service Manuals and</p>
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HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

	<p>circuit diagrams</p> <p>KB25. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB26. the Mechanical knowledge and proper use of tools to perform the activities, like:</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies <p>KB27. basic structure and function of the body system and associated component</p> <p>KB28. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. use effective written communication protocols</p> <p>SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner</p> <p>SA3. produce written information, which may include technical material, that is appropriate for the intended audience</p>

HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organise, and accomplish work SB4. prioritize the necessary actions
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations

HSS/N5612 Facilitate Biomedical Instrumentation Services for basic clinical equipment (advanced)

NOS Version Control

NOS Code	HSS/N5612		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	12/05/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	09/05/2017
Occupation	Non-Direct Care	Next review date	09/05/2020

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HSS/N5613
repair and maintenance

Supervise and guide technicians dealing with medical equipment

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an individual to supervise, train, guide and direct other technicians, assistants or personnel dealing with medical equipment repair and maintenance.

**HSS/N5613
repair and maintenance**

Supervise and guide technicians dealing with medical equipment

National Occupational Standard

Unit Code	HSS/N5613
Unit Title (Task)	Supervise and guide technicians dealing with medical equipment repair and maintenance
Description	This OS unit is about supervising, training, guiding and/or directing other technicians, assistants or personnel dealing with medical equipment repair and maintenance.
Scope	The unit/task covers the following: <ul style="list-style-type: none"> Managing medical equipment, supervising, training and/or directing other technicians.
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Managing medical equipment, supervising, training and/or directing other technicians	To be competent, the user/individual on the job must be able to: PC1. inspect equipment, structures, or materials to identify the cause of errors or other problems or defects PC2. generate or use different sets of rules for combining or grouping things in different ways PC3. deal with people at junior levels to effectively direct their work towards optimum output
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. the relevant policies and procedures followed in the organization KA2. the role and importance of assisting other healthcare providers KA3. usage of HMIS
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. how to manage people/patient effectively as per the guidelines KB2. the principles of leadership and guidance
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. enter, transcribe, record, store, or maintain information in written or electronic/ magnetic form SA2. provide information to supervisors, co-workers, and subordinates in written form SA3. record information in HMIS
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. read and understand information and clinical notes presented in writing
A. Core Skills / Generic Skills	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. provide information to supervisors, co-workers, and subordinates by

HSS/N5613 Supervise and guide technicians dealing with medical equipment repair and maintenance

	<p>telephone, or in person</p> <p>SA6. listen and understand information and ideas presented through spoken words and sentences</p> <p>SA7. communicate information and ideas in speaking so others will understand</p>
<p>B. Professional Skills</p>	<p>Decision Making</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB11. decide which tasks to assign to junior technicians and other workers in their teams</p> <p>SB12. choose the methods, times, locations and durations to train health care workers assigned to the collection, identification, transportation, preparation, storage and analysis of specimens</p>
	<p>Plan and Organize</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB13. keep up-to-date technically and apply new knowledge to the job</p> <p>SB14. develop specific goals and plans to prioritize, organize, and accomplish work</p>
	<p>Customer Centricity</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB15. tell other technician about the importance of patient care and confidentiality</p>
	<p>Problem Solving</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB16. monitor/Assess one's own performance or that of other individuals, or organizations to make improvements or take corrective action</p>
	<p>Analytical Thinking</p>
<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB17. use computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information</p>	
<p>Critical Thinking</p>	
<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB18. evaluate the performance of other technicians</p> <p>SB19. determine the extent to which employees have met the various work objectives and adhered to laboratory policies and procedures, lead to recommendations for new job assignments and further training</p>	

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repair and maintenance

Supervise and guide technicians dealing with medical equipment

NOS Version Control

NOS Code	HSS/N5613		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	12/05/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	09/05/2017
Occupation	Non-Direct Care	Next review date	09/05/2020

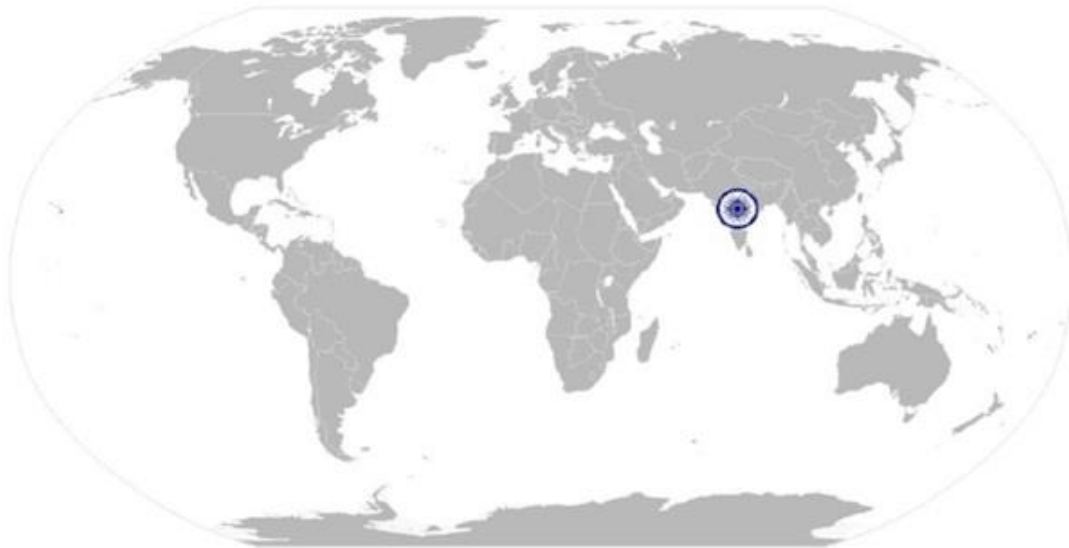
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HSS/N9608

Follow radiation safety guidelines

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required by an allied health professional to follow radiation safety guidelines and provide safe environment to individuals.

HSS/N9608

Follow radiation safety guidelines

National Occupational Standard

Unit Code	HSS/N9608
Unit Title (Task)	Follow radiation safety guidelines
Description	This OS unit is about following radiation safety guidelines and to provide safe environment to individuals. These individuals include staff working and individuals undergoing treatment or diagnostic procedures. This is applicable to all Allied Health Professionals.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Following and complying with radiation safety guidelines <p>Reference: 'The content of this National Occupational Standard is drawn from the UK Skills for Health NOS [SFHHCS3 Ensure the safety of individuals exposed to radiation within healthcare and SFHHCS4 Measure an individual's healthcare radiation exposure to minimize risk]'.</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Following and complying with radiation safety guidelines	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. confirm sources of radiation and likely type of exposure for all individuals within the work area</p> <p>PC2. apply appropriate assessment methodology suitable for source, type of exposure, dose, level of risk and the recipients' exposure time</p> <p>PC3. confirm that all required procedures and associated safety measures are compliant with current and relevant legislation requirements</p> <p>PC4. determine and assess the appropriateness of the projected radiation dose over a suitable period of time for an individual or key staff and other personnel</p> <p>PC5. record the results of the assessment accurately and in correct format, referencing any monitoring measurements taken to accepted published values to indicate conformance within accepted safety guidance limits for the procedures undertaken within the work practice</p> <p>PC6. communicate and provide information, advice and guidance effectively in the appropriate medium to meet the individuals needs and preferences</p> <p>PC7. report actual and potential risks from radiation, in context, to other healthcare professionals and where appropriate seek assistance and advice</p> <p>PC8. maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, policies and protocols</p> <p>PC9. confirm that all required procedures and associated safety measures are current and compliant with relevant legislation</p> <p>PC10. maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols</p>
Knowledge and Understanding (K)	

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Follow radiation safety guidelines

<p>A. Organizational Context (Knowledge of the Healthcare provider/ Organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. basic requirements of the health and safety and other legislations and regulations that apply to the organization</p> <p>KA2. person(s) responsible for health, safety, and security in the organization</p> <p>KA3. relevant up-to-date information on health, safety, and security that applies to the organization</p> <p>KA4. organization's emergency procedures and responsibilities for handling hazardous situation</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. how to communicate effectively in the appropriate medium to meet all recipients' needs in relation to radiation safety</p> <p>KB2. the safety principles for radiation physics including therapy and diagnostic procedures</p> <p>KB3. the range, type and nature of radiation and associated equipment and/or medical devices used within the relevant specialist areas and their work practices</p> <p>KB4. the importance of quality assuring the facilities, equipment and other resources for operational safety and monitoring each operational procedure for radiation safety in accordance with legislation and organizational requirements</p> <p>KB5. the range of permissible exposure limits applicable to diagnostic investigations or therapeutic interventions with radiation and/or radioactive substances within the organization</p> <p>KB6. the importance and appropriate methodologies for radiation safety assessments within the organization</p> <p>KB7. the importance and requirements for radiation safety requirements</p> <p>KB8. the importance of environmental monitoring to minimise the risk of accidental exposure to radiation and to identify if an adverse event occurs</p> <p>KB9. how to communicate and provide advice, guidance and information effectively in the appropriate medium to meet individuals needs and preferences for the measurement of radiation exposure</p> <p>KB10. the range, type and dose of radiation used within diagnostic or therapeutic activities</p> <p>KB11. the factors and circumstances of the working environment that contribute to radiation exposure and the importance of environmental monitoring</p> <p>KB12. how to undertake environmental monitoring of controlled work areas and the surrounding area, the acceptable limits and the implications and consequences of adverse results and who to inform</p>
<p>Skills (S)</p>	
<p>A. Core Skills / Generic Skills</p>	<p>Writing Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. report and record incidents</p>
	<p>Reading Skills</p>
<p>The user/individual on the job needs to know and understand how to:</p>	

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Follow radiation safety guidelines

	SA2. read and understand company policies and procedures
	Oral Communication (Listening and Speaking Skills)
	The user/individual on the job needs to know and understand how to:
	SA3. report hazards and incidents clearly with the appropriate level of urgency
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to:
	SB1. make decisions pertaining to the organization
	SB2. exhibit commitment to the organization and exert effort and perseverance
	Plan and Organize
	The user/individual on the job needs to know and understand how to:
	SB3. organize files and documents
	SB4. plan for safety of the work environment
	SB5. recommend and implement plan of action
	Patient Centricity
	The user/individual on the job needs to know and understand:
	SB6. how to make exceptional effort to keep the environment and work place safe
	Problem Solving
The user/individual on the job needs to know and understand how to:	
SB7. identify hazards and suggest effective solutions to identified problems	
Analytical Thinking	
The user/individual on the job needs to know and understand how to:	
SB8. analyze the seriousness of hazards	
Critical Thinking	
The user/individual on the job needs to know and understand how to:	
SB9. evaluate opportunities to improve health, safety and security	
SB10. show understanding and empathy for others	

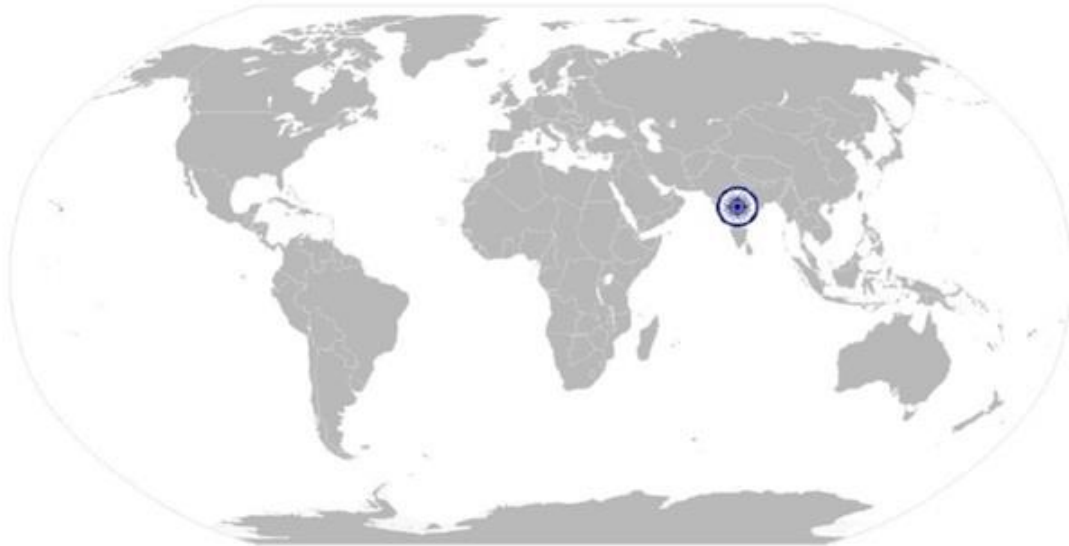
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Follow radiation safety guidelines

NOS Version Control

NOS Code	HSS/N9608		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	12/05/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	19/05/17
Occupation		Next review date	19/05/20

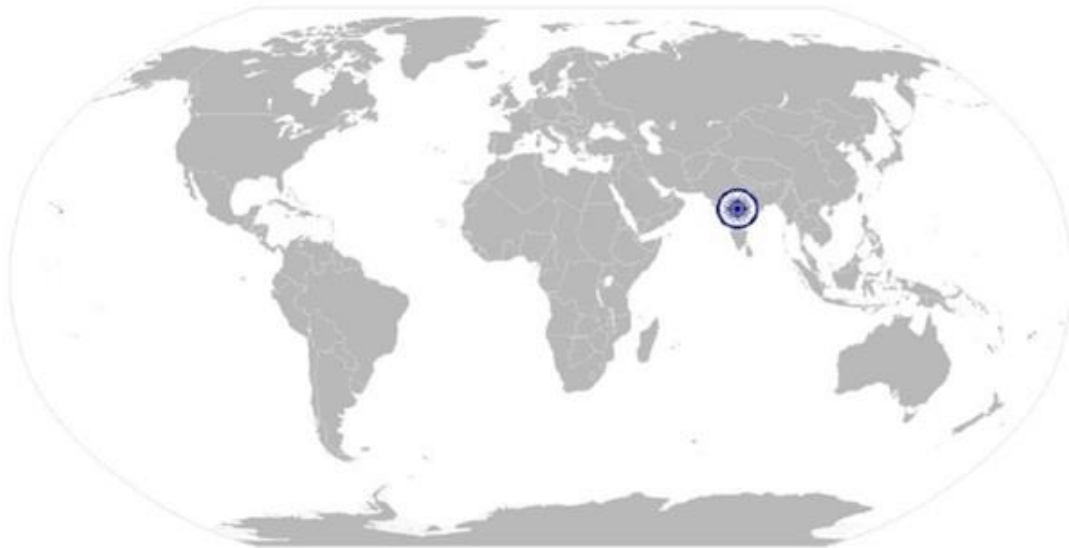
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HSS/N9611

Monitor and assure quality

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding, skills required by an individual to monitor and assure quality

HSS/N9611

Monitor and assure quality

National Occupational Standard

Unit Code	HSS/N9611
Unit Title (Task)	Monitor and assure quality
Description	This OS unit is about assuring quality in all procedures.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> Identify, solve and monitor treatment related outcomes/hospital services procedures Attend class/read publications to continue industry education Identify needs and expectations of patient/health care professionals
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Identify, solve and monitor treatment related outcomes/hospital services procedures	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. conduct appropriate research and analysis PC2. evaluate potential solutions thoroughly PC3. Identify and correct any hazards that he/she can deal with safely, competently and within the limits of his/her authority PC4. promptly and accurately report any hazards that he/she is not allowed to deal with to the relevant person and warn other people who may be affected PC5. follow the organization's emergency procedures promptly, calmly, and efficiently PC6. complete any health and safety records legibly and accurately
Attend class/read publications to continue industry education	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC7. participate in education programs which include current techniques, technology and trends PC8. keep abreast with latest information and technology pertaining to medical field
Identify needs and expectations of patient/health care professionals	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC9. report any identified breaches in health, safety, and security procedures to the designated person PC10. identify and recommend opportunities for improving health, safety, and security to the designated person
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. basic requirements of the health and safety and other legislations and regulations that apply to the organization KA2. information on quality standards and various monitoring mechanisms used by the organization KA3. relevant up-to-date information on health, safety, and security that applies to the organization KA4. organization's emergency procedures and responsibilities for handling hazardous situations
B. Technical Knowledge	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KB1. perform monitoring and evaluation of various hospital procedures using quality standards

HSS/N9611

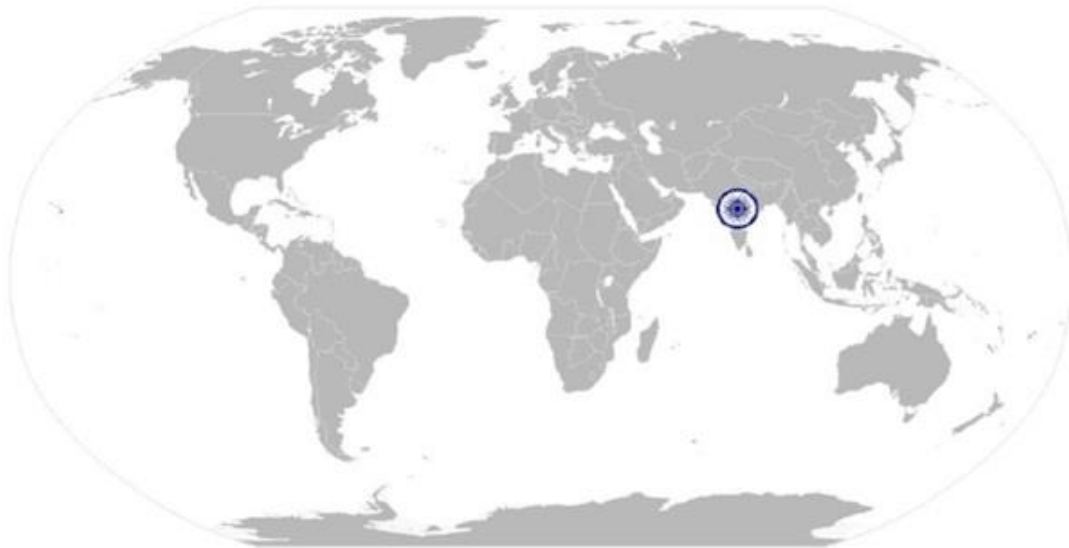
Monitor and assure quality

	<p>KB2. accurately identify problems affecting quality of health services provided by the organization</p> <p>KB3. conduct research and perform market analysis on quality standards</p> <p>KB4. select and implement proper hygiene interventions</p> <p>KB5. complete hospital related ethical procedures</p> <p>KB6. access and interpret medical, and scientific literature</p> <p>KB7. apply human needs/motivational theory</p> <p>KB8. provide thorough and efficient individualized care</p> <p>KB9. employ methods to measure satisfaction. E.g., patient's feedback</p>
Skills (S)	
A. Core Skills / Generic Skills	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA1. read and understand company policies and procedures
	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA2. report and record incidents
B. Professional Skills	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA3. handle positive/negative feedback provided by the patients or their families SA4. able to empathize and provide solutions to the feedback
	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make decisions pertaining to the area of work SB2. exhibit commitment to the organization and exert effort and perseverance
B. Professional Skills	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. document and organize meetings, files and documents SB4. recommend and implement plan of action
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. how to make exceptional effort to meet patient needs and resolve conflict to patient satisfaction
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB6. identify quality related issues and provide optimal solutions which will benefit organization and customers both
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB7. analyze the issues affecting hospital service quality and provide solution to it
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB8. evaluate opportunities to improve quality of healthcare services and	

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Monitor and assure quality

become competent in the market



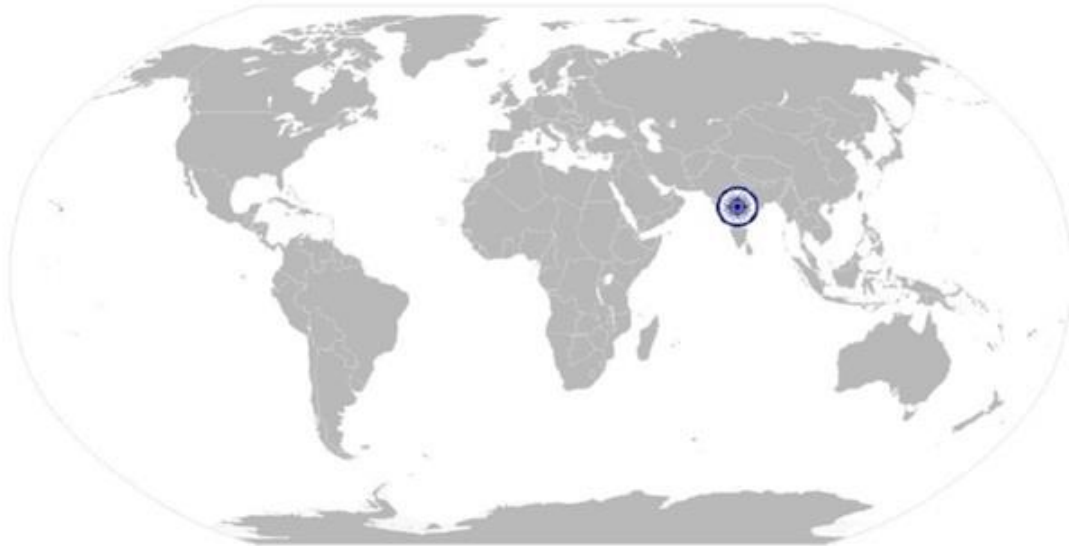
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Monitor and assure quality

NOS Version Control

NOS Code	HSS/N9611		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	12/05/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	19/05/17
Occupation		Next review date	19/05/20

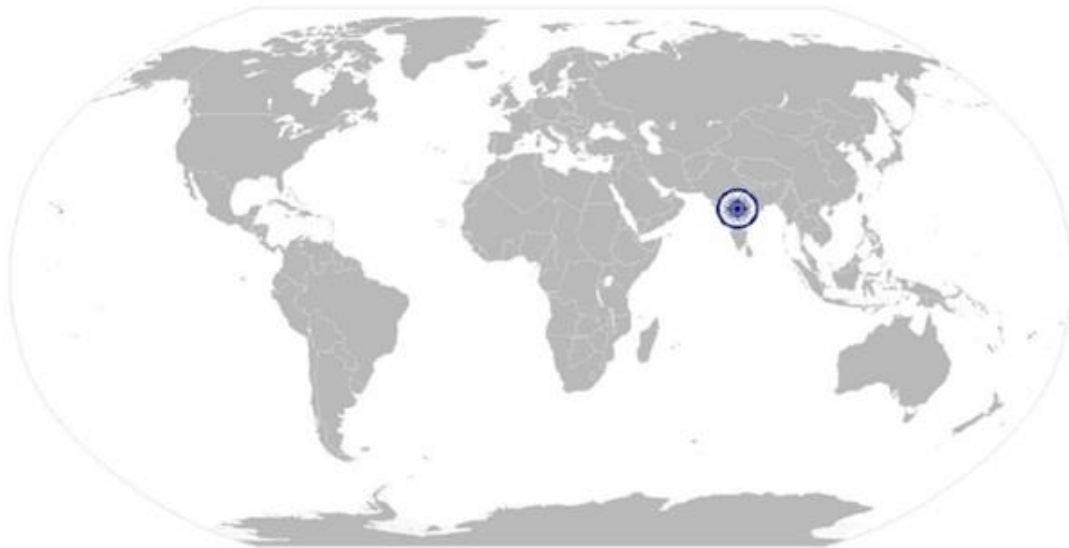
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HSS/N9615

Maintain inter-personal relationship with patients, colleagues and others

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required in an allied health professional to exhibit and maintain interpersonal relations with co-workers and patients, meeting work requirements and effective team work.

HSS/N9615 Maintain inter-personal relationship with patients, colleagues and others

National Occupational Standard

Unit Code	HSS/N9615
Unit Title (Task)	Maintain inter-personal relationship with patients, colleagues and others
Description	This Occupational Standard describes the knowledge, understanding and skills required in an allied Health Professional to exhibit and maintain professional behavior with co-workers and patients, meeting work requirements and effective team work.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> Communicating and maintaining professional behavior with co-workers and patients & their families Working with other people to meet requirements Establishing and managing requirements, planning and organizing work, ensuring accomplishment of the requirements
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Communicating and maintaining professional behavior with co-workers and patients	To be competent, the user/individual on the job must be able to: <p>PC1. communicate effectively with all individuals regardless of age, caste, gender, community or other characteristics without using terminology unfamiliar to them</p> <p>PC2. utilize all training and information at one's disposal to provide relevant information to the individual</p> <p>PC3. confirm that the needs of the individual have been met</p> <p>PC4. respond to queries and information needs of all individuals</p> <p>PC5. adhere to guidelines provided by one's organization or regulatory body relating to confidentiality</p> <p>PC6. respect the individual's need for privacy</p> <p>PC7. maintain any records required at the end of the interaction</p>
Working with the people to meet	To be competent, the user/individual on the job must be able to: <p>PC8. integrate one's work with other people's work effectively</p> <p>PC9. utilize time effectively and pass on essential information to other people on timely basis</p> <p>PC10. work in a way that shows respect for other people</p> <p>PC11. carry out any commitments made to other people</p> <p>PC12. reason out the failure to fulfill commitment</p> <p>PC13. identify any problems with team members and other people and take the initiative to solve these problems</p>
Establishing and managing requirements, planning and organizing work, ensuring accomplishment of the requirements	To be competent, the user/individual on the job must be able to: <p>PC14. clearly establish, agree, and record the work requirements</p> <p>PC15. ensure his/her work meets the agreed requirements</p> <p>PC16. treat confidential information correctly</p> <p>PC17. work in line with the organization's procedures and policies and within the limits of his/her job role</p>
Knowledge and Understanding (K)	

HSS/N9615 Maintain inter-personal relationship with patients, colleagues and others

<p>C. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. guidelines on communicating with patients and other individuals</p> <p>KA2. guidelines on maintaining confidentiality and respecting need for privacy</p> <p>KA3. the business, mission, and objectives of the organization</p> <p>KA4. the scope of work of the role</p> <p>KA5. the responsibilities and strengths of the team and their importance to the organization</p> <p>KA6. the information that is considered confidential to the organization</p> <p>KA7. effective working relationships with the people external to the team, with which the individual works on a regular basis</p> <p>KA8. procedures in the organization to deal with conflict and poor working relationships</p> <p>KA9. the relevant policies and procedures of the organization</p>
<p>D. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. how to communicate effectively (face-to-face, by telephone and in writing)</p> <p>KB2. how to handle stressful or risky situations when communicating with patients and/or other individuals</p> <p>KB3. when to ask for assistance when situations are beyond one's competence and authority</p> <p>KB4. how to maintain confidentiality and to respect an individual's need for privacy</p> <p>KB5. how to ensure that all information provided to individuals is from reliable sources</p> <p>KB6. disclosure of any information to unauthorized persons would subject to disciplinary action and possible termination</p> <p>KB7. the essential information that needs to be shared with other people</p> <p>KB8. the importance of effective working relationships and how these can contribute towards effective working relationships on a day-to-day basis</p> <p>KB9. the importance of integrating ones works effectively with others</p> <p>KB10. the types of working relationships that help people to work well together and the types of relationships that need to be avoided</p> <p>KB11. the types of opportunities an individual may seek out to improve relationships with others</p> <p>KB12. how to deal with difficult working relationships with other people to sort out</p> <p>KB13. the importance of asking the appropriate individual for help when required</p> <p>KB14. the importance of planning, prioritizing and organizing, timely work</p> <p>KB15. the importance of clearly establishing work requirement</p> <p>KB15. the importance of being flexible in changing priorities when the importance and urgency comes into play</p> <p>KB16. how to make efficient use of time, and to avoid things that may prevent work deliverables from being expedited</p> <p>KB17. the importance of keeping the work area clean and tidy</p>

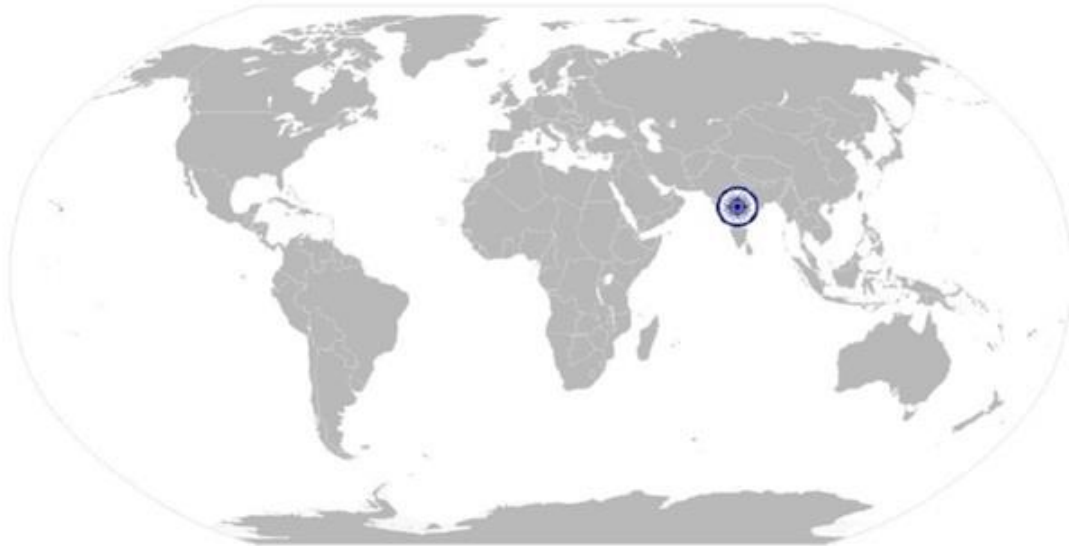
HSS/N9615 Maintain inter-personal relationship with patients, colleagues and others

Skills (S)		
C. Core Skills / Generic Skills	Reading Skills	
	The user/ individual on the job needs to know and understand how to: SA1. read and understand work related documents and information shared by different sources SA2. read organizational policies and procedures	
	Writing Skills	
	The user/ individual on the job needs to know and understand how to: SA3. write effective communications to share information with the team members and other people outside the team SA4. write at least one local/ official language used in the local community SA5. report progress and results SA6. record problems and resolutions	
	Oral Communication (Listening and Speaking Skills)	
	The user/ individual on the job needs to know and understand how to: SA7. communicate essential information to colleagues face-to-face or through telecommunication SA8. speak at least one local language SA9. question others appropriately in order to understand the nature of the request or compliant SA10. report progress and results SA11. interact with other individuals SA12. negotiate requirements and revised agreements for delivering them	
	D. Professional Skills	Decision Making
		The user/individual on the job needs to know and understand how to: SB1. make decisions on information to be communicated based on needs of the individual and various regulations and guidelines
		Plan and Organize
		SB2. plan and organize files and documents
		Customer Centricity
		The user/individual on the job needs to know and understand how to: SB3. be responsive to problems of the individuals SB4. be available to guide, counsel and help individuals when required SB5. be patient and non-judgmental at all times SB6. communicate effectively with patients and their family, physicians, and other members of the health care team SB7. be capable of being responsive, listen empathetically to establish rapport in a way that promotes openness on issues of concern SB8. be sensitive to potential cultural differences SB9. maintain patient confidentiality SB10. respect the rights of the patient(s)
Problem Solving		
The user/individual on the job needs to know and understand how to: SB11. understand problems and suggest an optimum solution after evaluating possible solutions		
Analytical Thinking		

HSS/N9615

Maintain inter-personal relationship with patients, colleagues and others

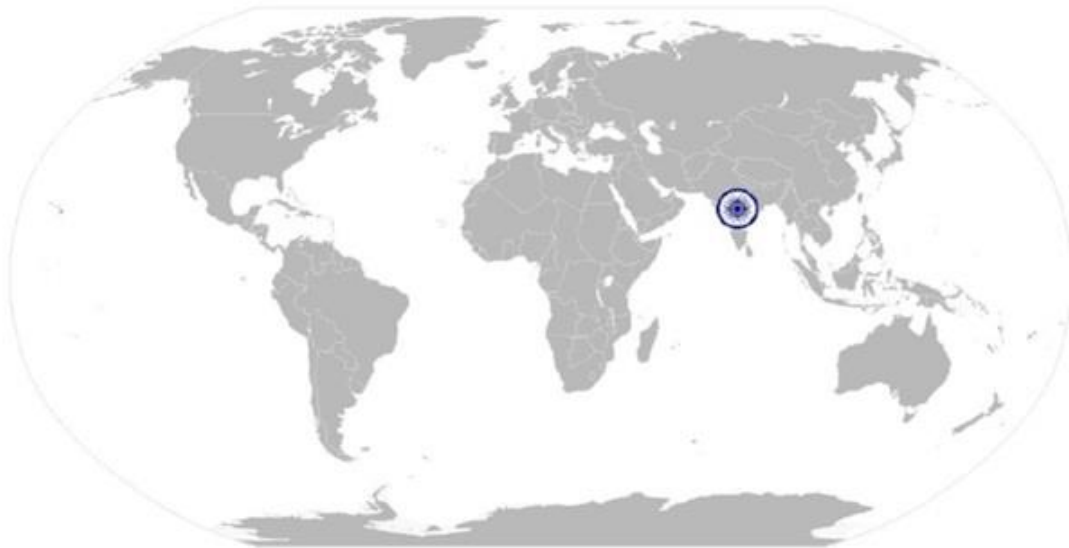
	Not applicable
	Critical Thinking
	Not applicable



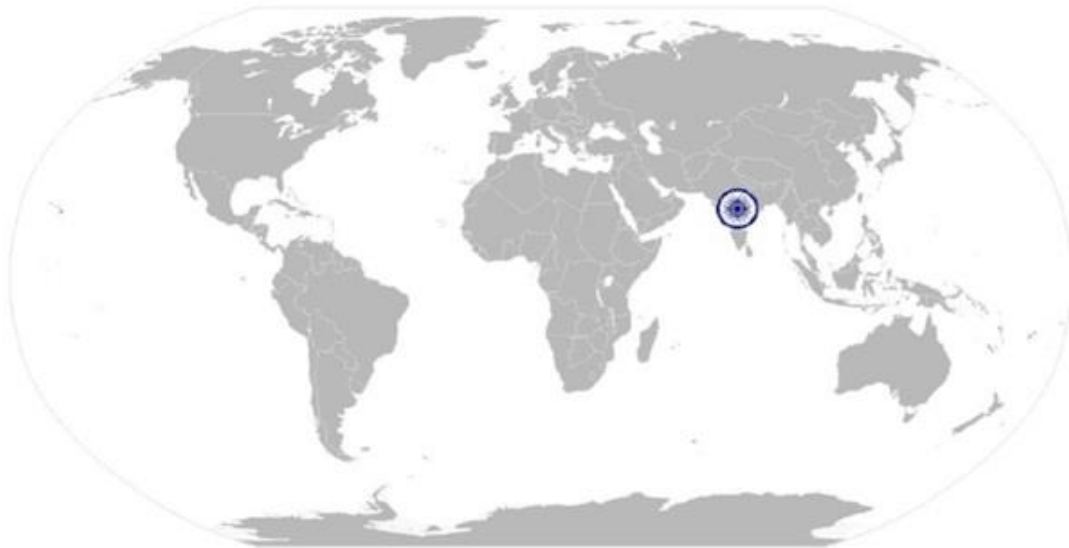
HSS/N9615 Maintain inter-personal relationship with patients, colleagues and others
NOS Version Control

NOS Code	MEP/N9615		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	12/05/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	01/05/17
Occupation		Next review date	01/05/20

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National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding, skills required in an allied Health Professional to recognize boundaries of the role and responsibilities, practice code of conduct and working the level of competence in accordance with legislation, protocols and guidelines.

HSS/N9616

Maintain professional and medico-legal conduct

National Occupational Standard

Unit Code	HSS/N9616
Unit Title (Task)	Maintain professional & medico-legal conduct
Description	This OS unit is about recognizing the boundaries of the role and responsibilities, practice code of conduct and working within the level of competence in accordance with legislation, protocols and guidelines set up by the healthcare provider. This is applicable to all Allied Health Professionals working in an organized, regulated environment.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Maintaining professional behaviour • Acting within the limit of one's competence and authority <ul style="list-style-type: none"> ○ Knowing one's job role ○ Knowing one's job responsibility ○ Recognizing the job role and responsibilities of co workers • Following the code of conduct and demonstrating best practices in the field <p>Reference: 'This National Occupational Standard is from the UK Skills for Health suite [SFHGEN63, Act within the limits of your competence and authority] It has been tailored to apply to healthcare in India and has been reproduced with their Permission'.</p>
Performance Criteria() w.r.t. the Scope	
Element	Performance Criteria
Maintaining professional behaviour	To be competent, the user/individual on the job must be able to: PC1. respect patient's individual values and needs PC2. maintain patient's confidentiality PC3. meet timelines for each assigned task PC4. respect patient's dignity and use polite language to communicate PC5. maintain professional environment
Acting within the limit of one's competence and authority	To be competent, the user/individual on the job must be able to: PC6. work within organizational systems and requirements as appropriate to one's role PC7. adhere to legislation, protocols and guidelines relevant to one's role and field of practice PC8. maintain competence within one's role and field of practice PC9. evaluate and reflect on the quality of one's work and make continuing improvements PC10. use relevant research based protocols and guidelines as evidence to inform one's practice
Following the code of conduct and demonstrating best practices in the field	To be competent, the user/individual on the job must be able to: PC11. recognize the boundary of one's role and responsibility and seek supervision when situations are beyond one's competence and authority PC12. promote and demonstrate good practice as an individual and as a team member at all times PC13. identify and manage potential and actual risks to the quality and safety of practice

HSS/N9616

Maintain professional and medico-legal conduct

	<p>PC14. maintain personal hygiene and contribute actively to the healthcare ecosystem</p> <p>PC15. maintain a practice environment that is conducive to the provision of medico- legal healthcare</p>
<p>Knowledge and Understanding (K)</p>	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the relevant legislation, standards, policies, and procedures followed in the organization</p> <p>KA2. the medical procedures and functioning of required medical equipment</p> <p>KA3. role and importance of assisting other healthcare providers in delivering care</p> <p>KA4. how to engage and interact with other providers in order to deliver quality and maintain continued care</p> <p>KA5. personal hygiene measures and handling techniques</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. the limitations and scope of the role and responsibilities of self and others</p> <p>KB2. the importance of working within the limits of one’s competence and authority</p> <p>KB3. the importance of personally promoting and demonstrating good practice</p> <p>KB4. the detrimental effects of non-compliance</p> <p>KB5. the importance of intercommunication skills</p> <p>KB6. the legislation, protocols and guidelines affecting one’s work</p> <p>KB7. the organizational systems and requirements relevant to one’s role</p> <p>KB8. the sources of information and literature to maintain a constant access to upcoming research and changes in the field</p> <p>KB9. the difference between direct and indirect supervision and autonomous practice, and which combination is most applicable in different circumstances</p> <p>KB10. the importance of individual or team compliance with legislation, protocols, and guidelines and organizational systems and requirements</p> <p>KB11. how to report and minimize risks</p> <p>KB12. the principle of meeting the organization’s needs, and how this should enable one to recognize one’s own limitations and when one should seek support from others</p> <p>KB13. the processes by which improvements to protocols/guidelines and organizational systems/requirements should be reported</p> <p>KB14. the procedure for accessing training, learning and development needs for oneself and/or others within one’s organization</p> <p>KB15. the actions that can be taken to ensure a current, clear and accurate understanding of roles and responsibilities is maintained, and how this affects the way one work as an individual or part of a team</p> <p>KB16. the risks to quality and safety arising from:</p> <ul style="list-style-type: none"> • working outside the boundaries of competence and authority • not keeping up to date with best practice

HSS/N9616

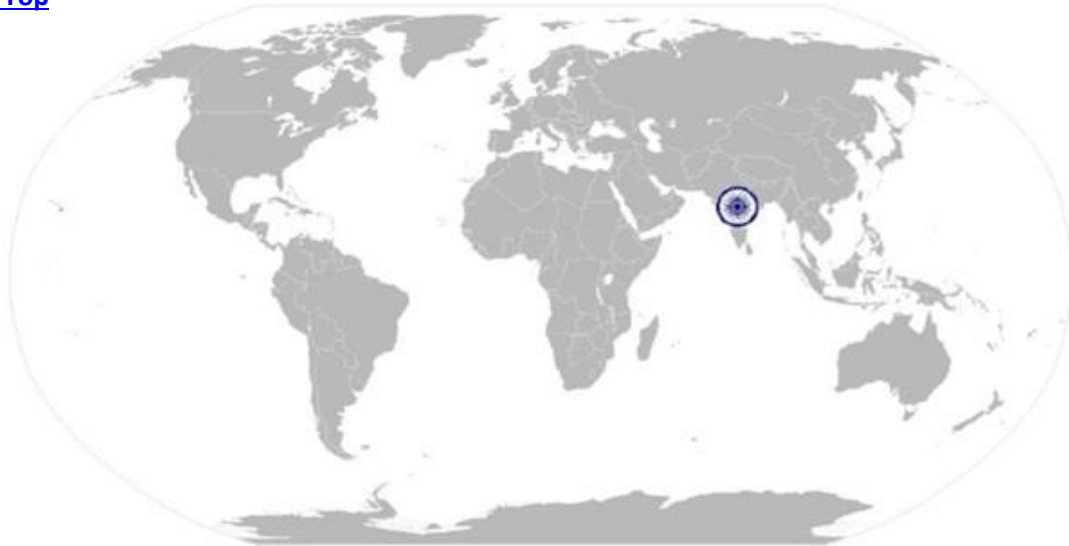
Maintain professional and medico-legal conduct

	<ul style="list-style-type: none"> poor communication insufficient support lack of resources <p>KB17. the importance of personal hygiene</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. document reports, task lists, and schedules SA2. prepare status and progress reports SA3. record daily activities SA4. update other co-workers
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA5. read about changes in legislations and organizational policies SA6. keep updated with the latest knowledge
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA7. discuss task lists, schedules, and work-loads with co-workers SA8. Give clear instructions to patients and co-workers SA8. keep patient informed about progress SA9. avoid using jargon, slang or acronyms when communicating with a patient
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make decisions pertaining to the concerned area of work in relation to job role SB2. act decisively by balancing protocols and work at hand
	Plan and Organize
	Not Applicable
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB3. communicate effectively with patients and their family, physicians, and other members of the health care team SB4. be responsive and listen empathetically to establish rapport in a way that promotes openness on issues of concern SB5. be sensitive to potential cultural differences SB6. maintain patient confidentiality SB7. respect the rights of the patient(s)
	Problem Solving
	Not Applicable
	Analytical Thinking
	Not Applicable
Critical Thinking	
Not Applicable	

HSS/N9616 Maintain professional and medico-legal conduct
NOS Version Control

NOS Code	MEP/N9616		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	12/05/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	01/05/17
Occupation	Medical Equipment Technician (Advanced)	Next review date	01/05/20

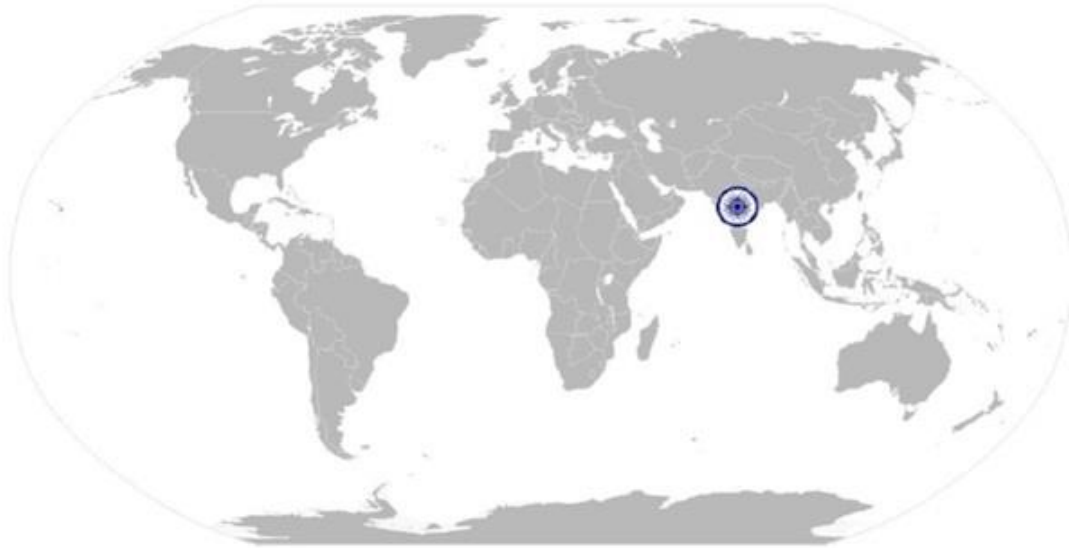
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HSS/N9617

Maintain a safe, healthy and secure working environment

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding, skills required in an allied Health Professional to monitor the working environment, and making sure it meets health, safety and security requirements.

HSS/N9617

Maintain a safe, healthy and secure working environment

National Occupational Standard

Unit Code	HSS/N9617
Unit Title (Task)	Maintain a safe , healthy and secure working environment
Description	This OS unit is about monitoring the working environment and ensuring a safe, healthy, secure and effective working conditions. This OS unit applies to all Allied Health professionals working within an organized workplace.
Scope	<p>This unit covers the following:</p> <ul style="list-style-type: none"> • Complying the health, safety and security requirements and procedures for workplace • Handling any hazardous situation with safely, competently and within the limits of authority • Reporting any hazardous situation and breach in procedures to ensure a safe, healthy, secure working environment
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Complying the health, safety and security requirements and procedures for workplace	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. identify individual responsibilities in relation to maintaining workplace health safety and security requirements</p> <p>PC2. comply with health, safety and security procedures for the workplace</p> <p>PC3. comply with health, safety and security procedures and protocols for environmental safety</p>
Handling any hazardous situation	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC4. identify potential hazards and breaches of safe work practices</p> <p>PC5. identify and interpret various hospital codes for emergency situations</p> <p>PC6. correct any hazards that individual can deal with safely, competently and within the limits of authority</p> <p>PC7. provide basic life support (BLS) and first aid in hazardous situations, whenever applicable</p> <p>PC8. follow the organization's emergency procedures promptly, calmly, and efficiently</p> <p>PC9. identify and recommend opportunities for improving health, safety, and security to the designated person</p> <p>PC10. complete any health and safety records legibly and accurately</p>
Reporting any hazardous situation	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC11. report any identified breaches in health, safety, and security procedures to the designated person</p> <p>PC12. promptly and accurately report the hazards that individual is not allowed to deal with, to the relevant person and warn other people who may get affected</p>
Knowledge and Understanding (K)	
E. Organizational Context (Knowledge of the company /	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. the importance of health, safety, and security in the workplace</p> <p>KA2. the basic requirements of the health and safety and other legislations and regulations that apply to the workplace</p>

HSS/N9617

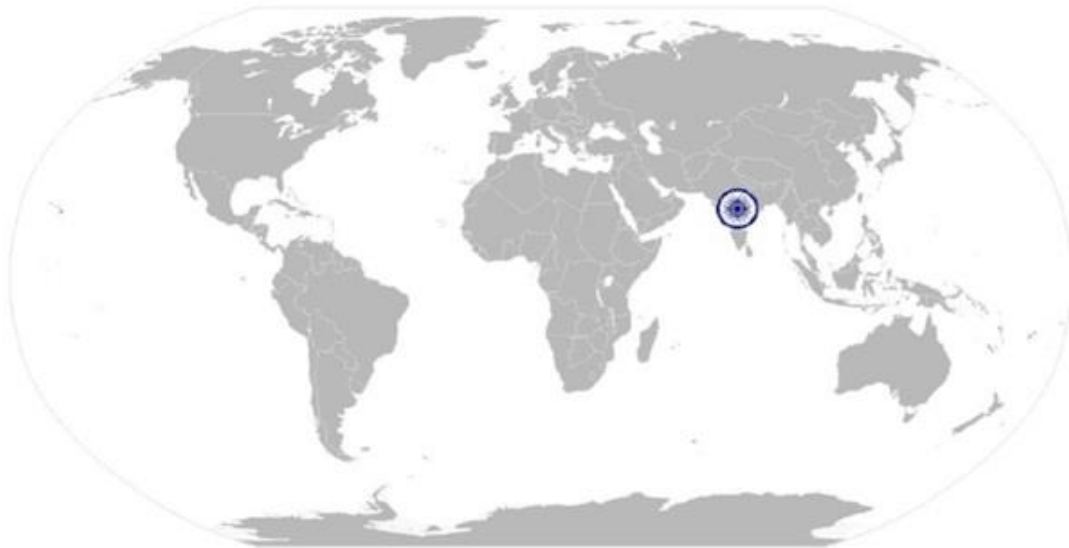
Maintain a safe, healthy and secure working environment

organization and its processes)	<p>KA3. the person(s) responsible for maintaining healthy, safe, and secure workplace</p> <p>KA4. the relevant up-to-date information on health, safety, and security that applies to the workplace</p> <p>KA5. the responsibilities of individual to maintain safe, healthy and secure workplace</p> <p>KA6. how to report the hazard</p>
F. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. requirements of health, safety and security in workplace</p> <p>KB2. how to create safety records and maintaining them</p> <p>KB3. the importance of being alert to health, safety, and security hazards in the work environment</p> <p>KB4. the common health, safety, and security hazards that affect people working in an administrative role</p> <p>KB5. how to identify health, safety, and security hazards</p> <p>KB6. the importance of warning others about hazards and how to do so until the hazard is dealt with</p>
Skills (S)	
E. Core Skills / Generic Skills	<p>Reading Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. read and understand company policies and procedures</p> <p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. report and record incident</p> <p>Oral Communication (Listening and Speaking Skills)</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA3. clearly report hazards and incidents with the appropriate level of urgency</p>
F. Professional Skills	<p>Decision Making</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the area of work</p> <p>Plan and Organize</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB2. plan for safety of the work environment</p> <p>Customer Centricity</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB3. communicate effectively with patients and their family, physicians, and other members of the health care team</p> <p>SB4. be capable of being responsive, listen empathetically to establish rapport in a way that promotes openness on issues of concern</p> <p>Problem Solving</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. identify hazards, evaluate possible solutions and suggest effective solutions</p> <p>Analytical Thinking</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB6. analyze the seriousness of hazards</p>

HSS/N9617

Maintain a safe, healthy and secure working environment

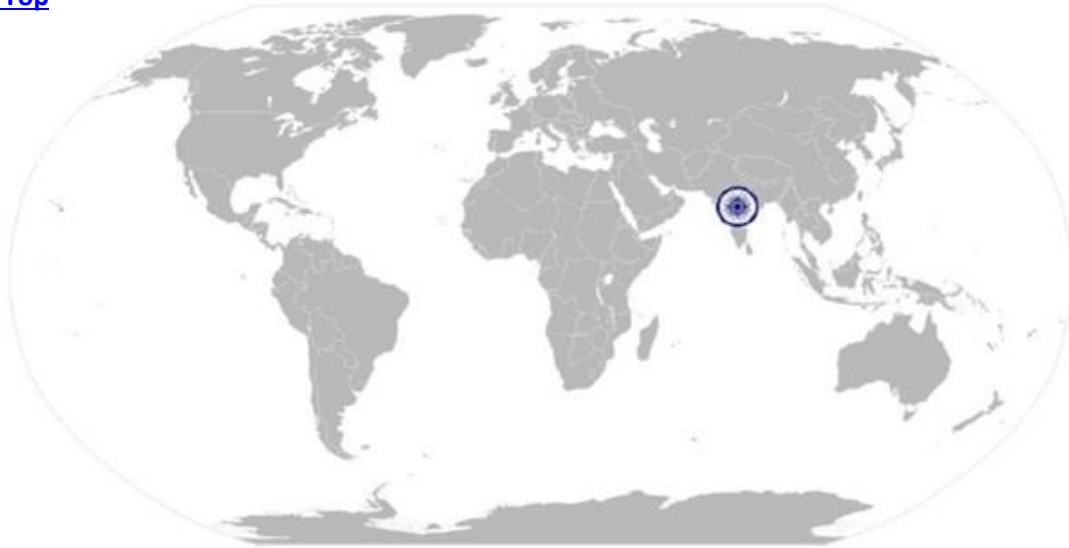
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB7. analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently



HSS/N9617 Maintain a safe, healthy and secure working environment
NOS Version Control

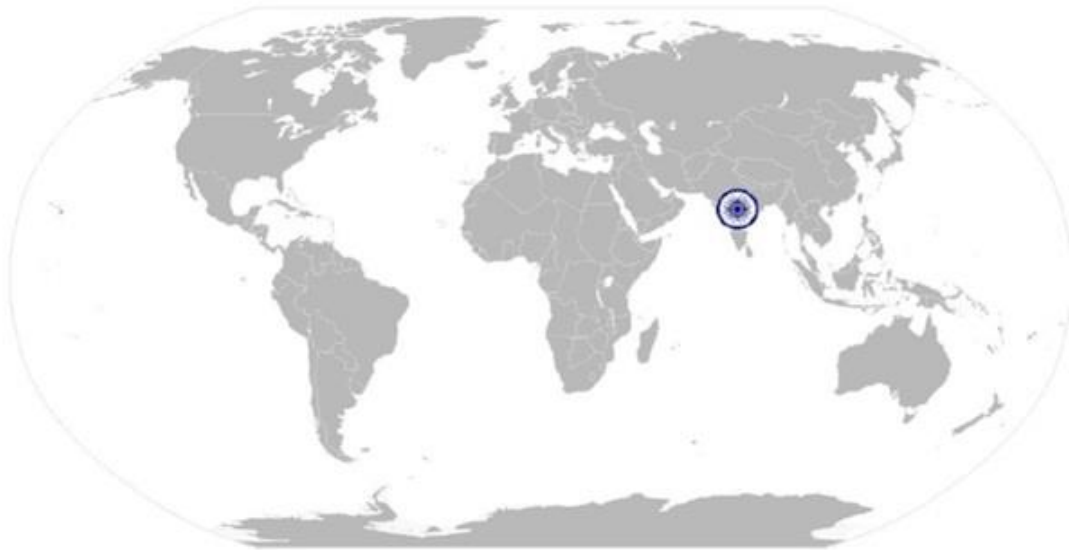
NOS Code	MEP/N9617		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	12/05/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	01/05/17
Occupation	Medical Equipment Technician (Advanced)	Next review date	01/05/20

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HSS/N9618 Follow biomedical waste disposal & infection control policies & procedures

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding, skills required of an Allied Health professional to manage biomedical waste and to comply with infection control policies and procedures.

HSS/N9618 Follow biomedical waste disposal & infection control policies & procedures

National Occupational Standard

Unit Code	HSS/N9618
Unit Title (Task)	Follow biomedical waste disposal & infection control policies & procedures
Description	This OS unit is about the safe handling and management of health care waste and following infection control polices.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Classification of the waste generated, segregation of biomedical waste, proper collection and storage of waste • Complying with effective infection control protocols that ensures the safety of the patient (or end-user of health-related products/services) • Maintaining personal protection and preventing the transmission of infection from person to person <p>Reference: ‘The content of this National Occupational Standard is drawn from the UK Skills for Health NOS [SFHCHS212 Disposal of clinical and non-clinical waste within healthcare and SFHCHS213 Implement an audit trail for managing waste within healthcare]’</p>
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Classification of the Waste Generated, Segregation of Biomedical Waste, Proper collection and storage of Waste	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. handle, package, label, store, transport and dispose of waste appropriately to minimize potential for contact with the waste and to reduce the risk to the environment from accidental release</p> <p>PC2. store clinical or related waste in an area that is accessible only to authorized persons</p> <p>PC3. minimize contamination of materials, equipment and instruments by aerosols and splatter</p>
Complying with an effective infection control protocols	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC4. apply appropriate health and safety measures following appropriate personal clothing & protective equipment for infection prevention and control</p> <p>PC5. identify infection risks and implement an appropriate response within own role and responsibility in accordance with the policies and procedures of the organization</p> <p>PC6. follow procedures for risk control and risk containment for specific risks. Use signs when and where appropriate</p> <p>PC7. follow protocols for care following exposure to blood or other body fluids as required</p> <p>PC8. remove spills in accordance with the policies and procedures of the organization</p> <p>PC9. clean and dry all work surfaces with a neutral detergent and warm water solution before and after each session or when visibly soiled</p> <p>PC10. demarcate and maintain clean and contaminated zones in all aspects of health care work</p> <p>PC11. confine records, materials and medicaments to a well-designated clean</p>

HSS/N9618 Follow biomedical waste disposal & infection control policies & procedures

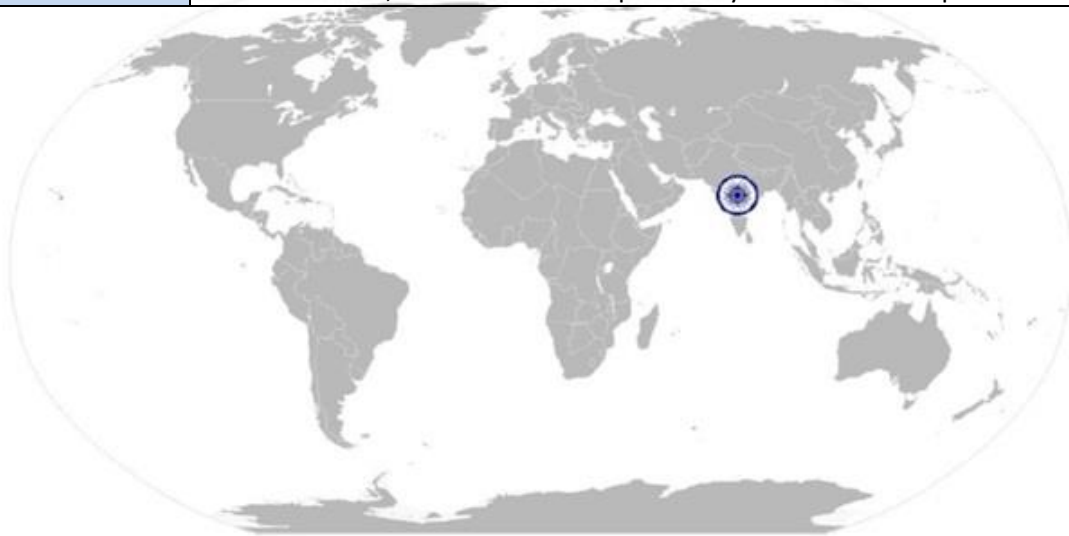
	<p>zone</p> <p>PC12. confine contaminated instruments and equipment to a well-designated contaminated zone</p> <p>PC13. decontaminate equipment requiring special processing in accordance with quality management systems to ensure full compliance with cleaning, disinfection and sterilization protocols</p> <p>PC14. replace surface covers where applicable</p> <p>PC15. maintain and store cleaning equipment</p> <p>PC16. report and deal with spillages and contamination in accordance with current legislation and procedures</p>
<p>Maintaining personal protection and preventing the transmission of infections from person to person</p>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC17. maintain hand hygiene following hand washing procedures before and after patient contact /or after any activity likely to cause contamination</p> <p>PC18. cover cuts and abrasions with water-proof dressings and change as necessary</p> <p>PC19. change protective clothing and gowns/aprons daily, more frequently if soiled and where appropriate, after each patient contact</p> <p>PC20. perform additional precautions when standard precautions alone may not be sufficient to prevent transmission of infection</p>
<p>Knowledge and Understanding (K)</p>	
<p>G. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant up-to-date information on health, safety, and security that applies to the organization</p> <p>KA2. organization's emergency procedures and responsibilities for handling hazardous situations</p> <p>KA3. person(s) responsible for health, safety, and security in the organization</p> <p>KA4. good personal hygiene practice including hand care</p>
<p>H. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. importance of and how to handle, package, label, store, transport and dispose of waste appropriately to minimize potential for contact with the waste and to reduce the risk to the environment from accidental release</p> <p>KB2. the importance to adhere to the organizational and national waste management principles and procedures</p> <p>KB3. the hazards and risks associated with the disposal and the importance of risk assessments and how to provide these</p> <p>KB4. the required actions and reporting procedures for any accidents, spillages and contamination involving waste</p> <p>KB5. the requirements of the relevant external agencies involved in the transport and receipt of your waste</p> <p>KB6. the importance of organizing, monitoring and obtaining an assessment of the impact the waste may have on the environment</p> <p>KB7. The current national legislation, guidelines, local policies and protocols which affect work practice</p> <p>KB8. the policies and guidance that clarify scope of practice, accountabilities and the working relationship between yourself and others</p>

HSS/N9618 Follow biomedical waste disposal & infection control policies & procedures

	<p>KB9. identification and management of infectious risks in the workplace</p> <p>KB10. aspects of infectious diseases including opportunistic organisms & pathogens</p> <p>KB11. basic microbiology including bacteria and bacterial spores, fungi, viruses</p> <p>KB12. the path of disease transmission including direct contact and penetrating injuries, risk of acquisition</p> <p>KB13. how to clean and sterile techniques</p> <p>KB14. susceptible hosts including persons who are immune suppressed, have chronic diseases such as diabetes and the very young or very old</p> <p>KB15. routine surface cleaning procedures at the start and end of the day, managing a blood or body fluid spill</p> <p>KB16. sharps handling and disposal techniques</p> <p>KB17. effective hand hygiene including hand wash, surgical hand wash, when hands must be washed</p> <p>KB18. good personal hygiene practice including hand care</p> <p>KB19. how to use personal protective equipment such as:</p> <p>KB20. the personal clothing and protective equipment required to manage the different types of waste generated by different work activities</p>
Skills (S)	
G. Core Skills / Generic Skills	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA1. read and understand company policies and procedures pertaining to managing biomedical waste and infection control and prevention
	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA2. report and record incidents
	Oral Communication (Listening and Speaking Skills)
H. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. take in to account opportunities to address waste minimization, environmental responsibility and sustainable practice issues SB2. apply additional precautions when standard precautions are not sufficient
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. consistently ensure instruments used for invasive procedures are sterile at time of use (where appropriate) SB4. consistently follow the procedure for washing and drying hands SB5. consistently maintain clean surfaces and limit contamination
	Customer Centricity
	The user/ individual on the job needs to know and understand how to:

HSS/N9618 Follow biomedical waste disposal & infection control policies & procedures

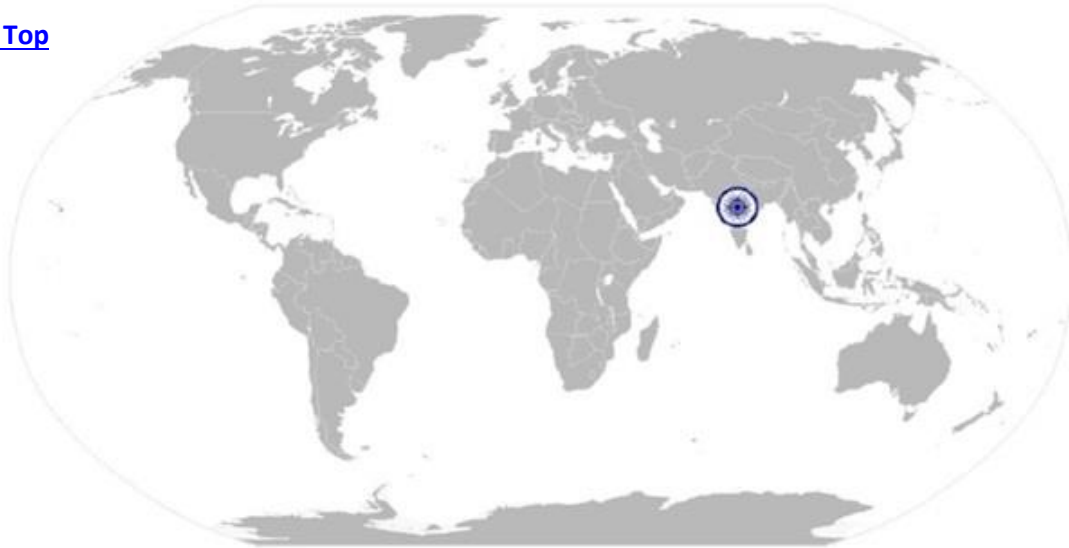
	SB6. how to make exceptional effort to keep the environment and work place clean
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. identify hazards and suggest effective solutions to identified problems pertaining to hospital waste and related infections
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyze the seriousness of hazards pertaining to hospital waste and related infections
	Critical Thinking
The user/ individual on the job needs to know and understand how to: SB9. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to act SB10. take into account opportunities to address waste minimization, prevent infection, environmental responsibility and sustainable practice issues	



HSS/N9618 Follow biomedical waste disposal & infection control policies & procedures
NOS Version Control

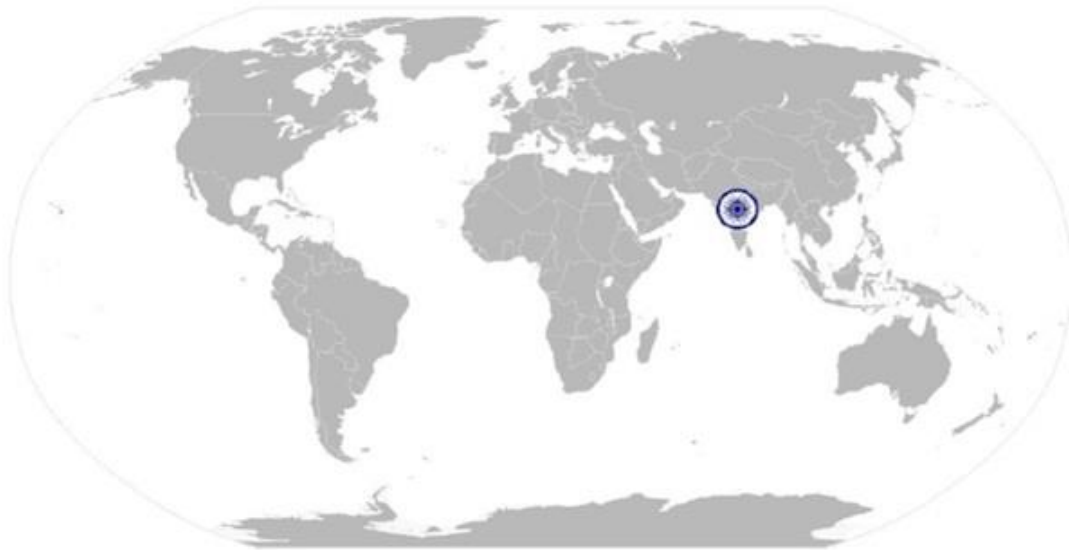
NOS Code	MEP/N9618		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	12/05/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	01/05/17
Occupation	Medical Equipment Technician (Advanced)	Next review date	01/05/20

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HSS/N5613 Facilitate biomedical instrumentation services in radiology department

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services in Radiology Department.

HSS/N5613 Facilitate biomedical instrumentation services in radiology department

National Occupational Standard

Unit Code	MEP/N5613
Unit Title (Task)	Facilitate biomedical instrumentation services in radiology department
Description	This OS unit is about MET facilitating Biomedical Instrumentation Services in Radiology Department.
Scope	<p>This unit/task covers the following tasks related to facilitating Biomedical Instrumentation Services in Radiology Department:</p> <ul style="list-style-type: none"> Plan the set-up of the radiology department in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to Radiology Department Provide Bio-medical Instrumentation Services to Radiology Department
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the radiology department in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment required in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of equipment in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic.</p> <p>PC3. plan the bio-medical instrumentation set-up of radiology department as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation in radiology department in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of equipment in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of radiology department indicating the deliverables, timelines, requisites & involved personnel.</p>
Special Attention to Regulatory/ other Requirements	PC8. comply the regulations laid down by regulatory bodies like AERB, OSHA, etc. for setting up and operationalization of radiology department.

HSS/N5613 Facilitate biomedical instrumentation services in radiology department

<p>specific to Radiology Department</p>	<p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, radiations, radio-active materials and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of radiology department.</p> <p>PC11. ensure proper documentation in accordance of special regulations of radiology department.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services to Radiology Department</p>	<p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment required in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment required in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff of all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic.</p> <p>PC16. train, educate and assess the staff of all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment of all fields of Radiology Department safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment of all fields of Radiology Department time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment of all fields of Radiology Department whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations for radiation installations</p> <p>PC23. provide information on radiation-related hazards and control measures to others in the workplace</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, radiations, radio-active materials and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible Medical Equipment required in all fields of Radiology Department during inspection, performance evaluation, calibration, testing, etc.</p>


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	PC28. ensure interdepartmental co-ordination as per organizational policy.
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like AERB, OSHA, etc. for setting up and operationalization of radiology department</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible Medical Equipment required in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic; like: Radiographic and fluoroscopic X-ray, Diagnostic ultrasound, Mammography, Nuclear Imaging, Positron emission tomography (PET), Medical imaging, Computed Tomography (CT) Linear Tomography, Picture archiving and communication systems (PACS), Magnetic Resonance Imaging (MRI scanner), conventional x-ray, portable X-ray, C-Arms, bone densitometers, bioluminescence imaging, accelerators, Image post processing and quantitative analysis consisting of state-of-the-art hardware, Multi-core processor workstations, Clinical Radiology Equipment, Computer Equipment and Critical Care Tower, etc.</p> <p>KB2. fundamental knowledge of different types of radiation, waves and radioactive materials used in radiology department.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while</p>

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	<p>handling electricity, fire, radiations, radio-active materials and other possible exposures in radiology department; like: Lead aprons and thyroid collars, Leaded glasses. Protective gloves or gauntlets, etc.</p> <p>KB4. what and how to do risk assessment and control of PPE program in context of radiology department</p> <p>KB5. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of equipment in all fields of Radiology Department, vis. Diagnostic, Interventional & Therapeutic.</p> <p>KB6. electrical safety standards</p> <p>KB7. radiation Safety Standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB11. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer's recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public Address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB18. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB21. basic knowledge of IT</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service Manuals and circuit diagrams</p> <p>KB26. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the Mechanical knowledge and proper use of tools to perform the</p>
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	<p>activities, like:</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies 
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. use effective written communication protocols</p> <p>SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner</p> <p>SA3. produce written information, which may include technical material, that is appropriate for the intended audience</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables</p>
	Oral Communication (Listening and Speaking Skills)
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude</p> <p>SA6. seek out and listen to colleagues and other health professionals</p> <p>SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information</p>
	B. Professional Skills
	Decision Making

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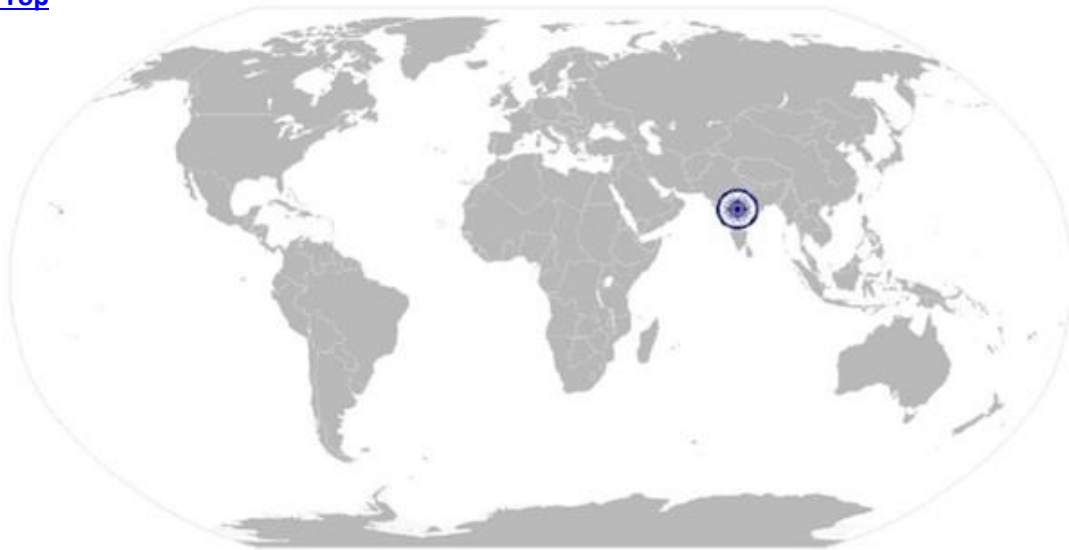
	The user/ individual on the job needs to know and understand how to: SB1. how to make sound, well-informed, and objective decisions SB2. how to perceive the impact and implications of decisions
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organise, and accomplish work SB4. how to prioritize the necessary actions
	Patient Centricity
	The user/ individual on the job needs to know and understand how to: SB5. how to work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government) SB6. how to assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
	Critical Thinking
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

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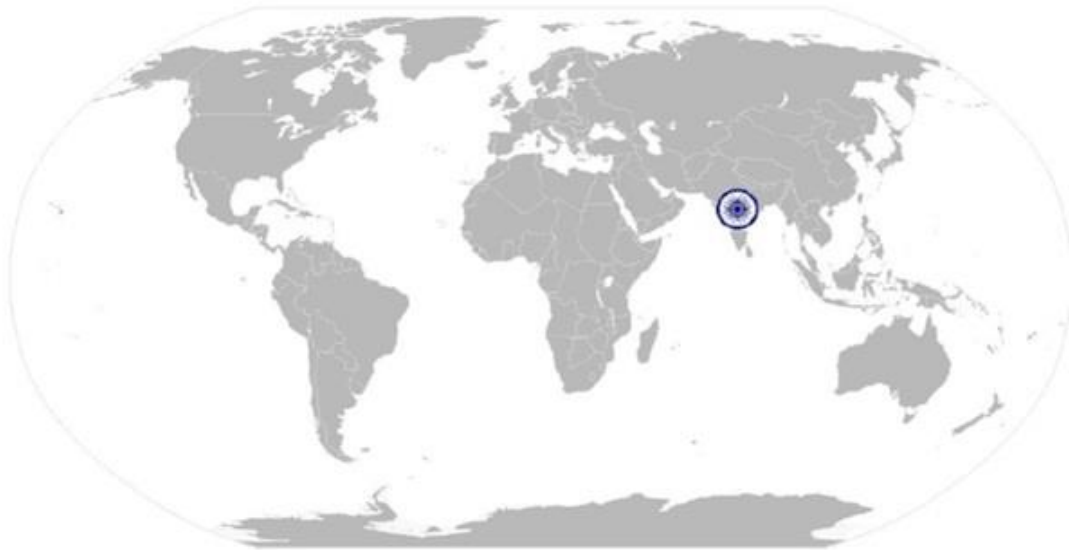
NOS Code	HSS/N5613		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/2013
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/2017
Occupation	Non-Direct Care	Next review date	14/05/2020

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HSS/N5614 Facilitate biomedical instrumentation services in dental department

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services in Dental Department.

HSS/N5614 Facilitate biomedical instrumentation services in dental department

National Occupational Standard

Unit Code	HSS/N5614
Unit Title (Task)	Facilitate biomedical instrumentation services in dental department
Description	This OS unit is about facilitating Biomedical Instrumentation Services in Dental Department.
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> Plan the set-up of the dental department in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to Dental Department Provide Bio-medical Instrumentation Services to Dental Department
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the dental department in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment required in all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontics, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopaedics , Paediatric Dentistry.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of equipment in all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontic, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopaedics , Paediatric Dentistry.</p> <p>PC3. plan the bio-medical instrumentation set-up of dental department as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation in dental department in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of equipment in all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontic, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopaedics, Paediatric Dentistry as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of dental</p>

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	<p>department indicating the deliverables, timelines, requisites & involved personnel.</p>
<p>Special Attention to Regulatory/ other Requirements specific to Dental Department</p>	<p>PC8. comply the regulations laid down by regulatory bodies like BIS, AERB, OSHA, etc. for setting up and operationalization of dental radiology division and dental department.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, radiations, and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of dental department.</p> <p>PC11. ensure proper documentation in accordance of special regulations of dental department.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services to Dental Department</p>	<p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment required in all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontics, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopedics , Pediatric Dentistry.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment required in all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontics, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopedics , Pediatric Dentistry.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff of all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontics, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopaedics , Paediatric Dentistry.</p> <p>PC16. train, educate and assess the staff of all fields of Dental Department, vis. Prosthodontics, Orthodontics, Endodontic, Periodontics, Operative Dentistry, Diagnostic Dentistry, Oral Medicine and Pathology, Oral & Maxillofacial Radiology, Dentofacial Orthopaedics , Paediatric Dentistry time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment of all fields of Dental Department safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment of all fields of Dental Department time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment of all fields of Dental Department whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations for dental equipment installations</p>

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	<p>PC23. provide information on radiation-related hazards and control measures to others in the workplace, if dental X-Ray equipment is installed.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, radiations and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible Medical Equipment required in all fields of Dental Department during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, AERB, OSHA, etc. for setting up and operationalization of dental radiology division and dental department</p>
<p>B. Technical</p>	<p>The user/individual on the job needs to know and understand:</p>

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Knowledge	<p>KB1. fundamental knowledge of function and operation of all possible medical equipment required in all fields of dental department, vis. prosthodontics, orthodontics, endodontics, periodontics, operative dentistry, diagnostic dentistry, oral medicine and pathology, oral & maxillofacial radiology, dentofacial orthopedics , pediatric dentistry; like: dental patient chairs, operator cabinetry, delivery systems, dental operator lights, x-ray imaging equipment, sterilization equipment, hand pieces, utility equipment, etc.</p> <p>KB2. fundamental knowledge of different types of radiation used in dental radiology division.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, radiations and other possible exposures in radiology department.</p> <p>KB4. what and how to do risk assessment and control of ppe program in context of dental department</p> <p>KB5. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of equipment in all fields of dental department, vis. prosthodontics, orthodontics, endodontics, periodontics, operative dentistry, diagnostic dentistry, oral medicine and pathology, oral & maxillofacial radiology, dentofacial orthopedics , pediatric dentistry.</p> <p>KB6. electrical safety standards</p> <p>KB7. radiation safety standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB11. what are the various types of inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer’s recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in biomedical instrumentation.</p> <p>KB18. fundamentals of bio-medical instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in biomedical instrumentation.</p>
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HSS/N5614 Facilitate biomedical instrumentation services in dental department

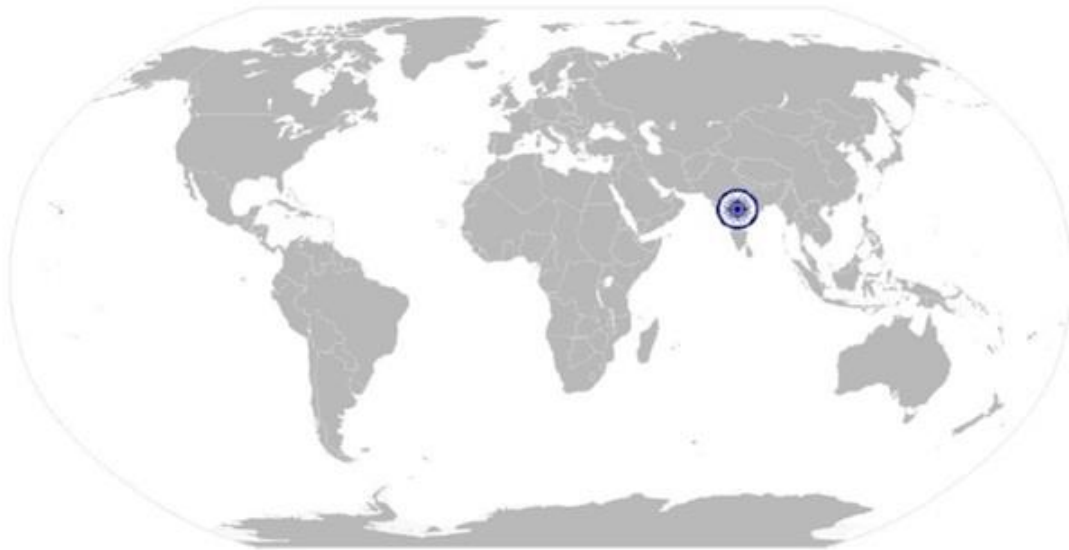
	<p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in biomedical instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in biomedical instrumentation</p> <p>KB21. basic knowledge of it</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service manuals and circuit diagrams</p> <p>KB26. electro/mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the mechanical knowledge and proper use of tools to perform the activities, like:</p> <ul style="list-style-type: none"> • Defibrillator analyzer • Hand tools • Non-invasive blood pressure (NIBP) analyzer • Tachometer • Spectrum analyzer • Electrical safety analyzer • Electrical surgical unit (ESU) analyzer • Patient simulators (e.g. SpO2 simulator) • Personal protective equipment (PPE) • Frequency scanner • Fetal monitor simulator • Phantoms • O2 meter • Watt meter • Cabling, terminals • Test lungs • IV testers • Pressure meters • Diagnostic software • Test equipment • Maintenance Management Systems • Spill Kits • Chemical cleaning supplies <p>KB28. basic structure and function of the body system and associated components</p> <p>KB29. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection
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HSS/N5614 Facilitate biomedical instrumentation services in dental department

	<ul style="list-style-type: none"> active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
B. Professional Skills	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information
	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions
B. Professional Skills	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organise, and accomplish work SB4. prioritize the necessary actions
	Patient Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
B. Professional Skills	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
B. Professional Skills	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and

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	problems
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations

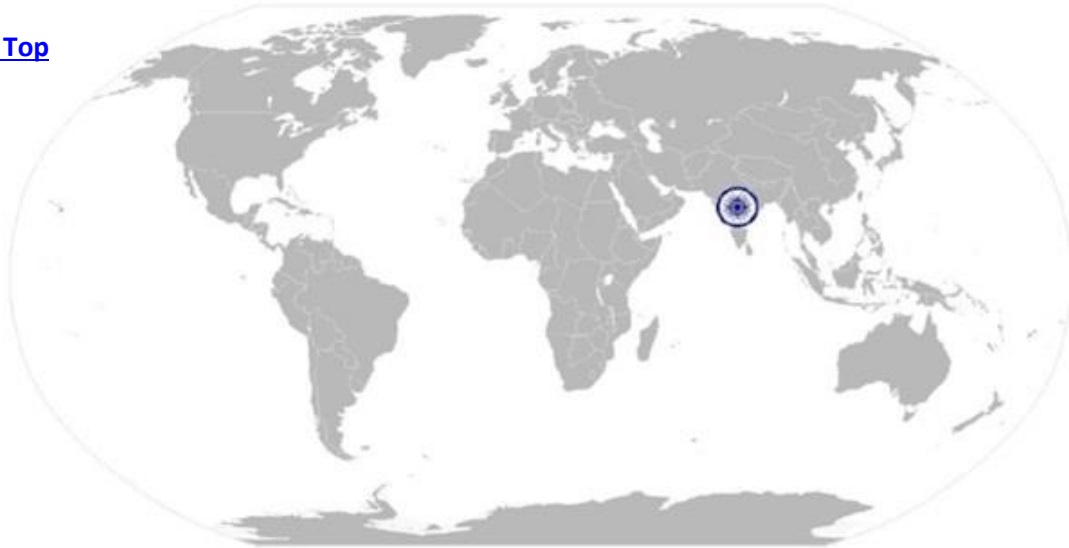


HSS/N5614 Facilitate Biomedical Instrumentation Services in dental department

NOS Version Control

NOS Code	HSS/N5614		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	31/07/13
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/17
Occupation	Non-Direct Care	Next review date	14/05/20

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HSS/N5615 Facilitate biomedical instrumentation services for life support & medical monitoring equipment

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services for life support & medical monitoring equipment.

HSS/N5615 Facilitate biomedical instrumentation services for life support & medical monitoring equipment

National Occupational Standard

Unit Code	HSS/N5615
Unit Title (Task)	Facilitate biomedical instrumentation services for life support & medical monitoring equipment
Description	This OS unit is about facilitating Biomedical Instrumentation Services for life support & medical monitoring equipment
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> Plan the set-up of the life support & medical monitoring equipment in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to life support & medical monitoring equipment Provide Bio-medical Instrumentation Services for life support & medical monitoring equipment
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the life support & medical monitoring equipment in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment related to life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of Medical Equipment related to life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc..</p> <p>PC3. plan the bio-medical instrumentation set-up of the life support & medical monitoring equipment as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation for the life support & medical monitoring equipment in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of the life support & medical monitoring equipment as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of the life support & medical monitoring equipment indicating the deliverables, timelines, requisites & involved personnel.</p>

HSS/N5615 Facilitate biomedical instrumentation services for life support & medical monitoring equipment

<p>Special Attention to Regulatory/ other Requirements specific to life support & medical monitoring equipment</p>	<p>PC8. comply the regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the life support & medical monitoring equipment.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, shock wave and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of the life support & medical monitoring equipment.</p> <p>PC11. ensure proper documentation in accordance of special regulations for the life support & medical monitoring equipment.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services for life support & medical monitoring equipment</p>	<p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment related to life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment related to life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff related to operations and use of life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc.</p> <p>PC16. train, educate and assess the staff related to operations and use of life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc. time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment related to life support & medical monitoring safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment related to life support & medical monitoring time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment related to life support & medical monitoring whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations for related to life support & medical monitoring equipment installations</p> <p>PC23. provide information on shock-wave related hazards and control measures to others in the workplace, if defibrillators is installed.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, shock wave and other possible exposures.</p>

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	<p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible Medical Equipment related to life support & medical monitoring during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation’s policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the life support & medical monitoring equipment.</p> <p>KA12. basic structure and function of the healthcare system in the country</p> <p>KA13. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA14. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>

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<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible Medical Equipment related to life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc.; like: medical ventilators, anaesthetic machines, heart-lung machines, ECMO, dialysis machines, ECG, EEG, EKG, EMG, Bedside Monitor, Multi Para Monitor, Central Nursing Station, Tread Mill, Stress Test System, Bio Monitor, Defibrillator, Pulse Oxy Meter, Oxygen Concentrator, I.V Pump, Continued B.P. Monitor, Pace Maker, External Pace Maker, nebulizer, endoscope, non-invasive ventilation system, Spirometers, medical IT solutions, patient monitors, foetal monitors, Blood flow systems, etc.</p> <p>KB2. fundamental knowledge of different types of shock waves used in cardiology or intensive care division.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, shock wave and other possible exposures during operation of all possible Medical Equipment related to life support & medical monitoring.</p> <p>KB4. what and how to do risk assessment and control of PPE program in context of the life support & medical monitoring equipment.</p> <p>KB5. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of equipment all possible Medical Equipment related to life support & medical monitoring required in respective departments, vis. Cardiology, neurology, pulmonology, nephrology, gastroenterology, etc.</p> <p>KB6. electrical safety standards</p> <p>KB7. radiation Safety Standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB11. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer's recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public Address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical</p>
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	<p>Instrumentation.</p> <p>KB18. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB21. basic knowledge of IT</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service Manuals and circuit diagrams</p> <p>KB26. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the Mechanical knowledge and proper use of tools to perform the activities, like:</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies <p>KB28. basic structure and function of the body system and associated component including</p>
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	<ul style="list-style-type: none"> • cells, tissue & organ • cardiovascular system • respiratory System • musculoskeletal system • endocrine system • digestive system • urinary system • reproductive system • integumentary system • lymphatic system • nervous system including sensory system- Eye & ears • special senses – smell, taste, visual and equilibrium & Hearing • immune system <p>KB29. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information
	B. Professional Skills
	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. make sound, well-informed, and objective decisions SB2. perceive the impact and implications of decisions

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	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organise, and accomplish work SB4. prioritize the necessary actions
	Patient Centricity
	The user/ individual on the job needs to know and understand how to: SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government) SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems	
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

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NOS Version Control

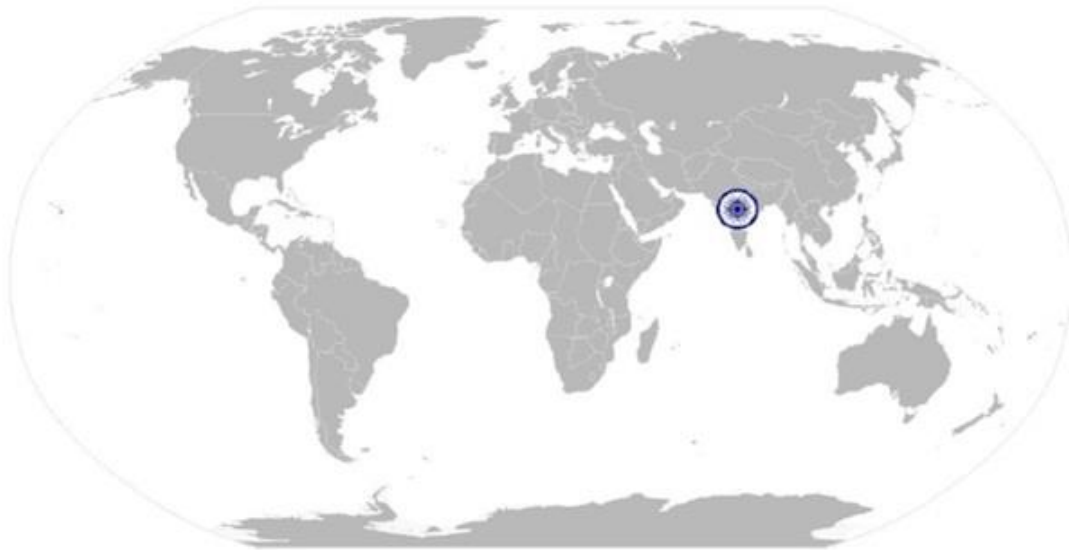
NOS Code	HSS/N5615		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	31/07/15
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	15/05/17
Occupation	Non-Direct Care	Next review date	15/05/20

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HSS/N5616 Facilitate biomedical instrumentation services to laboratory & blood bank

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services to Laboratory & Blood bank.

HSS/N5616 Facilitate biomedical instrumentation services to laboratory & blood bank

National Occupational Standard

Unit Code	HSS/N5616
Unit Title (Task)	Facilitate biomedical instrumentation services to laboratory & blood bank
Description	This OS unit is about facilitating Biomedical Instrumentation Services to Laboratory & Blood Bank.
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> Plan the set-up of the Laboratory & Blood Bank in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to Laboratory & Blood Bank Provide Bio-medical Instrumentation Services to Laboratory & Blood Bank
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the Laboratory & Blood Bank in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Hematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Hematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.</p> <p>PC3. plan the bio-medical instrumentation set-up of the Laboratory & Blood Bank as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation for the Laboratory & Blood Bank in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of all possible Medical Equipment required in all fields of Laboratory & Blood Bank as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of all possible Medical Equipment required in all fields of Laboratory & Blood Bank indicating the deliverables, timelines, requisites &</p>

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<p>Special Attention to Regulatory/ other Requirements specific to Laboratory & Blood Bank</p>	<p>involved personnel.</p> <p>PC8. comply the regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of all possible Medical Equipment required in all fields of Laboratory & Blood Bank.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, chemical, toxins and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of the Laboratory & Blood Bank.</p> <p>PC11. ensure proper documentation in accordance of special regulations for the Laboratory & Blood Bank.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services to Laboratory & Blood Bank</p>	<p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Hematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Hematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff related to operations and use of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Hematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.</p> <p>PC16. train, educate and assess the staff related to operations and use of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Hematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment of Laboratory & Blood Bank safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment of Laboratory & Blood Bank time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment of Laboratory & Blood Bank whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations of Laboratory & Blood Bank equipment installations</p> <p>PC23. provide information on chemicals/toxins related hazards and control</p>

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	<p>measures to others in the workplace.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, chemicals/toxins and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible Medical Equipment required in all fields of Laboratory & Blood Bank during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
<p>Knowledge and Understanding (K)</p>	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the Laboratory & Blood Bank.</p> <p>KA12. basic structure and function of the healthcare system in the country</p> <p>KA13. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA14. how to work with individuals to promote physical approaches to</p>

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	<p>optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Haematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.; like: Centrifuge, Incubator, Semiautoanalyzer, Spectrophotometer / Colorimeter, Urine Analyzer, Autoclave, Electronic balance, L-Mould / Embedding station, Microtome, Waterbath, fluorescence microscopes, laboratory microscopes, stereo inspection microscopes, co-oximeters, luminometers, chemostats, osmometers, flow cytometers, densitometers, colposcopes, hematology analyzers, and immunoassay analyzers, blood gas analyzers, sterilizers, Microtomes and cell preparation equipment, Mixing and stirring equipment, Blood Bank Equipment, Constant Temperature Refrigerators, etc.</p> <p>KB2. fundamental knowledge of different types of chemicals/toxins used in Laboratory & Blood bank.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, chemicals/toxins and other possible exposures during operation of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Haematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc..</p> <p>KB4. what and how to do risk assessment and control of PPE program in context of the Laboratory & Blood Bank.</p> <p>KB5. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Laboratory & Blood Bank, vis. Haematology, Biochemistry, Histotechnology, Cytotechnology, Microbiology, Molecular pathology, Immunology, Serology, Blood Banking, etc.</p> <p>KB6. electrical safety standards</p> <p>KB7. radiation Safety Standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB11. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer's recommendations stated in the operational &</p>

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	<p>service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public Address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB18. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB21. basic knowledge of IT</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service Manuals and circuit diagrams</p> <p>KB26. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the Mechanical knowledge and proper use of tools to perform the activities, like:</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software
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	<ul style="list-style-type: none"> • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies <p>KB28. basic structure and function of the body system and associated component</p> <p>KB29. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA1. use effective written communication protocols
	SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner
	SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to:
SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables	
Oral Communication (Listening and Speaking Skills)	
The user/ individual on the job needs to know and understand how to:	
SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude	
SA6. seek out and listen to colleagues and other health professionals	
SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information	
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to:
	SB1. how to make sound, well-informed, and objective decisions
	SB2. how to perceive the impact and implications of decisions
	Plan and Organize
The user/ individual on the job needs to know and understand how to:	
SB3. develop specific goals and plans to prioritise, organise, and accomplish work	
SB4. how to prioritize the necessary actions	
Patient Centricity	
The user/ individual on the job needs to know and understand how to:	
SB5. how to work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the	

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	<p>general public, individuals who work in the agency, other agencies, or organisations outside the Government)</p> <p>SB6. how to assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services</p>
	<p>Problem Solving</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB7. detect the fault and take corrective measures</p>
	<p>Analytical Thinking</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB8. analyse information and use logic to address work-related issues and problems</p>
	<p>Critical Thinking</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently</p> <p>SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations</p>

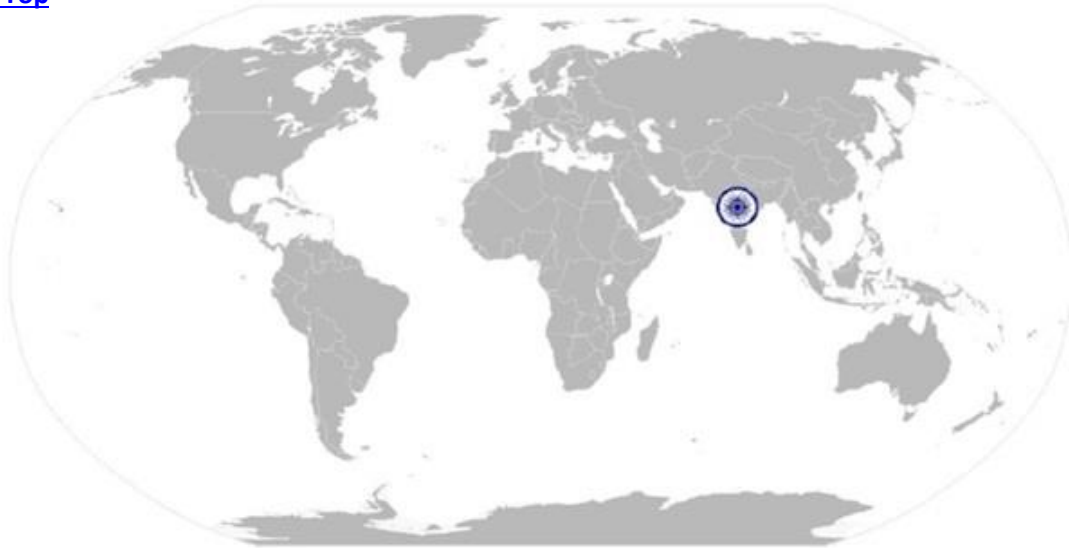


HSS/N5616 Facilitate biomedical instrumentation services to laboratory & blood bank

NOS Version Control

NOS Code	HSS/N5616		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	31/07/15
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	15/05/17
Occupation	Non-Direct Care	Next review date	15/05/20

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HSS/N5617

Facilitate biomedical instrumentation services to ophthalmology,
otorhinolaryngology, speech & audiology

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services to Ophthalmology, Otorhinolaryngology, Speech & Audiology.

HSS/N5617

Facilitate biomedical instrumentation services to ophthalmology, otorhinolaryngology, speech & audiology

National Occupational Standard

Unit Code	HSS/N5617
Unit Title (Task)	Facilitate biomedical instrumentation services to ophthalmology, otorhinolaryngology, speech & audiology
Description	This OS unit is about facilitating biomedical instrumentation services to ophthalmology, otorhinolaryngology, speech & audiology.
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> Plan the set-up of the Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to Ophthalmology, Otorhinolaryngology, Speech & Audiology Provide Bio-medical Instrumentation Services to Ophthalmology, Otorhinolaryngology, Speech & Audiology
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>PC3. plan the bio-medical instrumentation set-up of the Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers,</p>

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	<p>service providers and third party interface for procurement and set up the bio-medical instrumentation for the Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of all possible Medical Equipment required in all fields of Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of all possible Medical Equipment required in all fields of Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology indicating the deliverables, timelines, requisites & involved personnel.</p>
<p>Special Attention to Regulatory/ other Requirements specific to Ophthalmology, Otorhinolaryngology, Speech & Audiology</p>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. comply the regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of all possible Medical Equipment required in all fields of Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, sound, toxins and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of the Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology.</p> <p>PC11. ensure proper documentation in accordance of special regulations for the Department of Ophthalmology, Otorhinolaryngology, Speech & Audiology.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services to Ophthalmology, Otorhinolaryngology, Speech & Audiology</p>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders,</p>

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	<p>Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff related to operations and use of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>PC16. train, educate and assess the staff related to operations and use of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc. time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment of Ophthalmology, Otorhinolaryngology, Speech & Audiology safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment of Ophthalmology, Otorhinolaryngology, Speech & Audiology time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment of Ophthalmology, Otorhinolaryngology, Speech & Audiology whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations of Ophthalmology, Otorhinolaryngology, Speech & Audiology equipment installations</p> <p>PC23. provide information on sound waves/vibrations related hazards and control measures to others in the workplace.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, sound waves/vibrations and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible</p>
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	<p>Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the Laboratory & Blood Bank.</p> <p>KA12. basic structure and function of the healthcare system in the country</p> <p>KA13. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA14. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible Medical Equipment required for Examination, Diagnosis, Measurement, Treatment, and rehabilitation in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology,</p>

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	<p>Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.; like: Autorefractor/Auto Refractometer, Chin Rests, Corneal Pachymeters, Optical Pachycam, Ultrasonic Pachymeters, Ophthalmoscope, Fixation Devices, Illuminated Cabinets & its Accessories, Ophthalmic Diagnostic Sets, Ocular Measurement Device, Ophthalmic Digital Imaging, Ophthalmic Ultrasound Devices, Pupillary Distance (PD) Meters, Oscopes, Slit Lamps, Surgical Viewing System, Tonometers, Wide-Angle Viewing Systems, Exam Chairs, Phoropter, Keratometer, Fundus Camera, Operating Microscope, Phacoemulsification Machine, Vitrectomy Machine, Audiometer, stroboscopy, otoscope, suction unit, hearing aids, computerized refraction, Interacoustics, Middle Ear Analyzer, cochlear implants, Assistive Listening Device, laryngoscope, rhinoscope, etc.</p> <p>KB2. fundamental knowledge of different types of sound & light waves/vibrations used in Ophthalmology, Otorhinolaryngology, Speech & Audiology.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, sound & light waves/vibrations and other possible exposures during operation of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>KB4. what and how to do risk assessment and control of PPE program in context of the Ophthalmology, Otorhinolaryngology, Speech & Audiology.</p> <p>KB5. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Ophthalmology, Otorhinolaryngology, Speech & Audiology, vis. Optics, Optometry, Ophthalmologic pathology, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Otology, Neurotology, Rhinology, Laryngology, Voice Disorders, Otorhinolaryngologic Surgery, Speech and swallow rehabilitation, Audiology, etc.</p> <p>KB6. electrical safety standards</p> <p>KB7. radiation Safety Standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p>
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	<p>KB11. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer's recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public Address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB18. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB21. basic knowledge of IT</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service Manuals and circuit diagrams</p> <p>KB26. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the Mechanical knowledge and proper use of tools to perform the activities, like:</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter
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	<ul style="list-style-type: none"> • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies <p>KB28. basic structure and function of the body system and associated component</p> <p>KB29. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. use effective written communication protocols SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner SA3. produce written information, which may include technical material, that is appropriate for the intended audience
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables
B. Professional Skills	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude SA6. seek out and listen to colleagues and other health professionals SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information
	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. how to make sound, well-informed, and objective decisions SB2. how to perceive the impact and implications of decisions
	Plan and Organize

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	The user/ individual on the job needs to know and understand how to: SB3. develop specific goals and plans to prioritise, organise, and accomplish work SB4. how to prioritize the necessary actions
	Patient Centricity
	The user/ individual on the job needs to know and understand how to: SB5. how to work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government) SB6. how to assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
	Critical Thinking
The user/ individual on the job needs to know and understand how to: SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations	

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NOS Version Control

NOS Code	MEP/N5617		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/15
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	14/05/17
Occupation	Non-Direct Care	Next review date	14/05/20

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National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services to Physiotherapy & Occupational Therapy.

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National Occupational Standard

Unit Code	HSS/N5618
Unit Title (Task)	Facilitate biomedical instrumentation services to physiotherapy & occupational therapy
Description	This OS unit is about facilitating Biomedical Instrumentation Services to Physiotherapy & Occupational Therapy
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> Plan the set-up of the Department of Physiotherapy & Occupational Therapy in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to Physiotherapy & Occupational Therapy Provide Bio-medical Instrumentation Services to Physiotherapy & Occupational Therapy
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the Department of Physiotherapy & Occupational Therapy in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>PC3. plan the bio-medical instrumentation set-up of the Department of Physiotherapy & Occupational Therapy as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation for the Department of Physiotherapy & Occupational Therapy in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of all possible Medical Equipment required in all fields of</p>

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	<p>Department of Physiotherapy & Occupational Therapy as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of all possible Medical Equipment required in all fields of Department of Physiotherapy & Occupational Therapy indicating the deliverables, timelines, requisites & involved personnel.</p>
<p>Special Attention to Regulatory/ other Requirements specific to Physiotherapy & Occupational Therapy</p>	<p>PC8. comply the regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of all possible Medical Equipment required in all fields of Department of Physiotherapy & Occupational Therapy.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, sound, toxins and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of the Department of Physiotherapy & Occupational Therapy.</p> <p>PC11. ensure proper documentation in accordance of special regulations for the Department of Physiotherapy & Occupational Therapy.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services to Physiotherapy & Occupational Therapy</p>	<p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff related to operations and use of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>PC16. train, educate and assess the staff related to operations and use of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and</p>

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	<p>Cryotherapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc. time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment of Physiotherapy & Occupational Therapy safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment of Physiotherapy & Occupational Therapy time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment of Physiotherapy & Occupational Therapy whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations of Physiotherapy & Occupational Therapy equipment installations</p> <p>PC23. provide information electricity/radiation/heat waves/vibrations related hazards and control measures to others in the workplace.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, radiation/shock waves/vibrations and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p>

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	<p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the Laboratory & Blood Bank.</p> <p>KA12. basic structure and function of the healthcare system in the country</p> <p>KA13. basic structure and function of healthcare facilities available at various levels, hospice care, clinics</p> <p>KA14. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible Medical Equipment required for Examination, Diagnosis, Measurement, Treatment, and rehabilitation in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.; like: therapeutic ultrasound units, electrical stimulators, shortwave diathermy products, low level laser therapy devices and EMG biofeedback equipment, physical therapy machines, etc.</p> <p>KB2. fundamental knowledge of different types of sound & light waves/vibrations used in Physiotherapy & Occupational Therapy.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, heat waves/vibrations and other possible exposures during operation of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>KB4. what and how to do risk assessment and control of PPE program in context of the Physiotherapy & Occupational Therapy.</p> <p>KB5. what are the possible support equipment, tools, different type of</p>

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	<p>resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Physiotherapy & Occupational Therapy, vis. Electrotherapy, Actinotherapy, Heat therapy, Exercise therapy, Manual therapy, Hydrotherapy and Cryotherapy, Developmental Therapy, Developmental Therapy, Behavioral therapy, Hand therapy, Sensory integration therapy, Aquatic occupational therapy, etc.</p> <p>KB6. electrical safety standards</p> <p>KB7. radiation Safety Standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB11. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer's recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public Address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical Instrumentation.</p> <p>KB18. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB21. basic knowledge of IT</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service Manuals and circuit diagrams</p> <p>KB26. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the Mechanical knowledge and proper use of tools to perform the activities, like:</p>
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	<ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies <p>KB28. basic structure and function of the body system and associated component</p> <p>KB29. process, condition & resources required by the body to support healthy functioning</p> <ul style="list-style-type: none"> • body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure • protection form infection • active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	<p>SA1. use effective written communication protocols</p> <p>SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner</p> <p>SA3. produce written information, which may include technical material, that is appropriate for the intended audience</p>
	Reading Skills
	The user/ individual on the job needs to know and understand how to:
	SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables

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	<p>Oral Communication (Listening and Speaking Skills)</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude</p> <p>SA6. seek out and listen to colleagues and other health professionals</p> <p>SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information</p>
<p>B. Professional Skills</p>	<p>Decision Making</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. how to make sound, well-informed, and objective decisions</p> <p>SB2. how to perceive the impact and implications of decisions</p>
	<p>Plan and Organize</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB3. develop specific goals and plans to prioritise, organise, and accomplish work</p> <p>SB4. how to prioritize the necessary actions</p>
	<p>Patient Centricity</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. how to work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government)</p> <p>SB6. how to assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services</p>
	<p>Problem Solving</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB7. detect the fault and take corrective measures</p>
	<p>Analytical Thinking</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB8. analyse information and use logic to address work-related issues and problems</p>
	<p>Critical Thinking</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB9. analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently</p> <p>SB10. demonstrate the ability to adapt to rapidly changing situations, e.g.: responds appropriately to critical situations, retains composure in stressful situations, applies existing skills to new situations</p>

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NOS Version Control

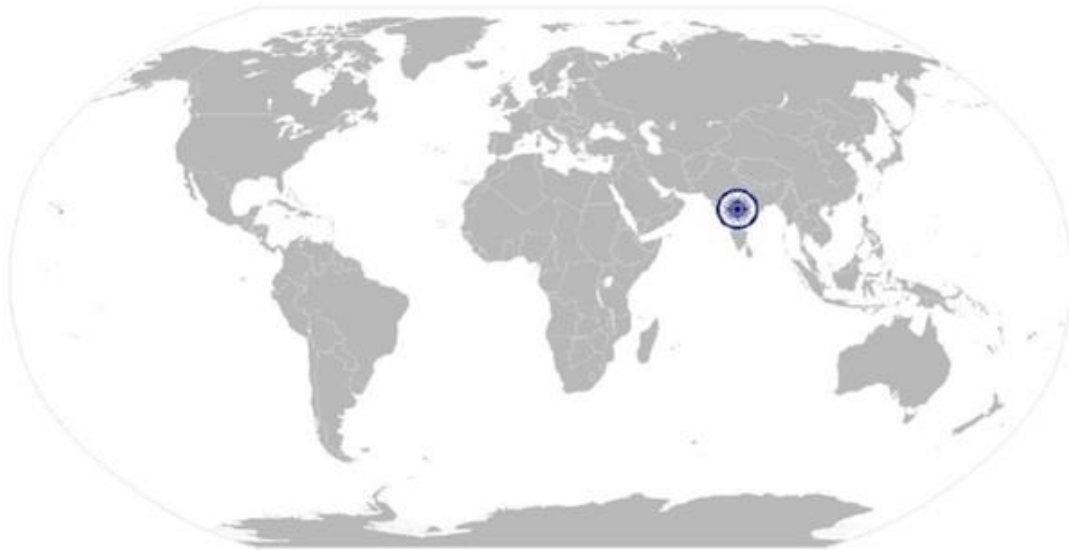
NOS Code	HSS/N5618		
Credits (NSQF)	TBD	Version number	1.0
Sector	Healthcare	Drafted on	31/07/15
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	15/05/17
Occupation	Non-Direct Care	Next review date	15/05/20

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HSS/N5619 Facilitate biomedical instrumentation services to surgical department

National Occupational Standard



Overview

This Occupational Standard describes the knowledge, understanding and skills required of an individual to facilitate Biomedical Instrumentation Services to Surgical Department.

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National Occupational Standard

Unit Code	HSS/N5619
Unit Title (Task)	Facilitate biomedical instrumentation services to surgical department
Description	This OS unit is about facilitating Biomedical Instrumentation Services to Surgical Department.
Scope	<p>This unit/task covers the following tasks:</p> <ul style="list-style-type: none"> Plan the set-up of the Surgical Department in terms of bio-medical instrumentation services Special Attention to Regulatory/other Requirements specific to Surgical Department Provide Bio-medical Instrumentation Services to Surgical Department
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Plan the set-up of the Surgical Department in terms of bio-medical instrumentation services	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. have fair knowledge of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>PC2. have fair knowledge of all possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>PC3. plan the bio-medical instrumentation set-up of the Surgical Department as per the consumer demand/specifications in terms of the inclusions, exclusions and mandatory medical equipment, support equipment/tools, different type of resources and regulatory requirements.</p> <p>PC4. plan the procurement of the planned equipment/others in qualitative, reasonable, timely and priority basis as per the consumer demand/specifications.</p> <p>PC5. able to find the best possible manufactures, vendors, suppliers, service providers and third party interface for procurement and set up the bio-medical instrumentation for the Surgical Department in accordance of planning.</p> <p>PC6. prepare and collect necessary documentation for each step, each person and each stake holders involved in successful installation and operation of all possible Medical Equipment required in all fields of Surgical Department as per policies, regulations and specifications.</p> <p>PC7. prepare a work-plan for the bio-medical instrumentation set-up, preventive maintenance, technical assistance and repair of all possible Medical Equipment required in all fields of Surgical</p>

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	<p>Department indicating the deliverables, timelines, requisites & involved personnel.</p>
<p>Special Attention to Regulatory/ other Requirements specific to Surgical Department</p>	<p>PC8. comply the regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of all possible Medical Equipment required in all fields of Surgical Department.</p> <p>PC9. ensure provision of all types of PPE (personal protective equipment) required while handling electricity, fire, sound, toxins and other possible exposures.</p> <p>PC10. ensure proper risk assessment and control of PPE program in context of the Department of Physiotherapy & Occupational Therapy.</p> <p>PC11. ensure proper documentation in accordance of special regulations for the Surgical Department.</p> <p>PC12. ensure action is annotated within Maintenance Management System according to departmental policy</p>
<p>Provide Bio-medical Instrumentation Services to Surgical Department</p>	<p>PC13. co-ordinate delivery, Installation and set-up of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>PC14. conduct periodic Preventive Maintenance of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>PC15. provide on-call and on-site Technical Assistance to staff related to operations and use of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>PC16. train, educate and assess the staff related to operations and use of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc. time to time.</p> <p>PC17. ensure staff could handle & operate the medical equipment of Surgical Department safely, properly and troubleshoot whenever necessary.</p> <p>PC18. calibrate the medical equipment of Surgical Department time to time and maintain the records.</p> <p>PC19. diagnose & Repair the faults of the medical equipment of Surgical Department whenever necessary.</p> <p>PC20. oversee and schedule the Third party interface whenever necessary</p> <p>PC21. identify safety hazards in the workplace and apply knowledge of responsibilities for notification</p> <p>PC22. apply knowledge of layout planning considerations of Surgical Department equipment installations</p>

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	<p>PC23. provide information temperature/heat waves/vibrations related hazards and control measures to others in the workplace.</p> <p>PC24. use appropriate personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, temperature/heat waves/vibrations and other possible exposures.</p> <p>PC25. ensure maintenance documentation starts with Incoming Inspection, all corrective action and preventive maintenance notations, manufacturer and/or service support documents, and equipment final disposition</p> <p>PC26. ensure management reports reflect all appropriate equipment histories.</p> <p>PC27. apply fundamental knowledge of function & operation of all possible Medical Equipment required in all fields of Surgical Department during inspection, performance evaluation, calibration, testing, etc.</p> <p>PC28. ensure interdepartmental co-ordination as per organizational policy.</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed by the provider</p> <p>KA2. follows established protocols as defined in organisation's policy while keeping and maintaining the medical records</p> <p>KA3. how to dress appropriately as per the guidelines of the organisation</p> <p>KA4. medico-legal aspects of Health Information Portability and Accountability</p> <p>KA5. the scope and objectives of the organisation in order to perform the duties to meet the vision and mission of the organisation</p> <p>KA6. breadth and depth of the functioning of the organisation in order to choose the appropriate approaches and methods for his/her role defined in the organisation</p> <p>KA7. documentation methods for interdisciplinary communication (wherever applicable) for the specific organisation.</p> <p>KA8. standards related to Bio-medical Instrumentation pertaining to inspections, testing, installation, dry run testing, etc.</p> <p>KA9. quality Frameworks including workplace specific frameworks and the relevant Standards laid down by National &/or International Accrediting Bodies like National Accreditation Board for Hospitals & Health Care Providers (NABH), Joint Commission International (JCI), Bureau of Indian Standards (BIS), etc.</p> <p>KA10. standards related to occupational safety and hazards & Medical Device Data Systems, maintenance management systems as per organization and national agencies.</p> <p>KA11. regulations laid down by regulatory bodies like BIS, OSHA, etc. for setting up and operationalization of the Laboratory & Blood Bank.</p> <p>KA12. basic structure and function of the healthcare system in the country</p> <p>KA13. basic structure and function of healthcare facilities available at various</p>

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	<p>levels, hospice care, clinics</p> <p>KA14. how to work with individuals to promote physical approaches to optimizing health, well-being and illness prevention, through the delivery of high-quality, innovative services</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. fundamental knowledge of Function and operation of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.; like: all surgical support systems, etc.</p> <p>KB2. fundamental knowledge of different types of heat waves/vibrations used in Surgical Department.</p> <p>KB3. fundamental knowledge of different types of personal protective clothing, equipment and personnel monitoring devices required while handling electricity, fire, heat waves/vibrations and other possible exposures during operation of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>KB4. what and how to do risk assessment and control of PPE program in context of the Surgical Department.</p> <p>KB5. what are the possible support equipment, tools, different type of resources, and regulatory requirements for successful installation and operation of all possible Medical Equipment required in all fields of Surgical Department, vis. General Surgical unit, Cryo Surgical Unit, Lasik Surgical unit, Suction unit, Laparoscopic unit, Reconstructive Surgical Unit, Electro-Surgical Unit, etc.</p> <p>KB6. electrical safety standards</p> <p>KB7. heat waves/vibrations Safety Standards</p> <p>KB8. proper lifting techniques</p> <p>KB9. familiarity to basic medical terminology</p> <p>KB10. what is the work order and its specifications, documentation, updation, review, verification and involved officials.</p> <p>KB11. what are the various types of Inventory, supplies & documents to be maintained & managed.</p> <p>KB12. how to identify safety hazards, troubleshoot the problem, take corrective measures within short span of time.</p> <p>KB13. how and when to escalate problems to the next level for support</p> <p>KB14. review the manufacturer's recommendations stated in the operational & service manual of each equipment and attend training sessions.</p> <p>KB15. standard biological precautions to be taken during diagnosis, repair, calibration and final testing/verification of equipment</p> <p>KB16. public Address alerts and codes</p> <p>KB17. fundamentals of electricity and electronics including concepts of ac circuits, dc circuits, magnetic circuits, transformers, ac machines and other electrical machines and their application in Biomedical</p>

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	<p>Instrumentation.</p> <p>KB18. fundamentals of Bio-Medical Instrumentation including concepts of measurement, transducers, analog instruments, measuring circuits, display devices, soldering, etc. and their application in Biomedical Instrumentation.</p> <p>KB19. fundamentals of computer systems like data, management and informatics related systems and their application in Biomedical Instrumentation.</p> <p>KB20. fundamentals of digital technology and their application in Biomedical Instrumentation</p> <p>KB21. basic knowledge of IT</p> <p>KB22. troubleshooting methods, contacts, and quick decision making.</p> <p>KB23. network protocols</p> <p>KB24. medical device integration</p> <p>KB25. how & when to provide maintenance as per the service Manuals and circuit diagrams</p> <p>KB26. electro/Mechanical, thermo dynamics, physics & instrumentations</p> <p>KB27. the Mechanical knowledge and proper use of tools to perform the activities, like:</p> <ul style="list-style-type: none"> • defibrillator analyzer • hand tools • non-invasive blood pressure (NIBP) analyzer • tachometer • spectrum analyzer • electrical safety analyzer • electrical surgical unit (ESU) analyzer • patient simulators (e.g. SpO2 simulator) • personal protective equipment (PPE) • frequency scanner • fetal monitor simulator • phantoms • O2 meter • watt meter • cabling, terminals • test lungs • IV testers • pressure meters • diagnostic software • test equipment • maintenance Management Systems • spill Kits • chemical cleaning supplies <p>KB28. basic structure and function of the body system and associated component</p> <p>KB29. process, condition & resources required by the body to support healthy</p>
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	<p>functioning</p> <ul style="list-style-type: none"> body regulation including maintenance of body temperature, fluid & electrolyte balance, elimination of body wastes, maintenance of blood pressure protection form infection active & Passive physical activities
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. use effective written communication protocols</p> <p>SA2. communicate information (for example, facts, ideas, or messages) in a brief, clear, and organised manner</p> <p>SA3. produce written information, which may include technical material, that is appropriate for the intended audience</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. understand and interpret written material, including technical materials, rules, regulations, instructions, reports, charts, graphs, or tables</p>
B. Professional Skills	Oral Communication (Listening and Speaking Skills)
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA5. practice effective communication with colleagues and other health professionals while maintaining a professional attitude</p> <p>SA6. seek out and listen to colleagues and other health professionals</p> <p>SA7. express information (for example, ideas or facts) to individual or groups effectively, taking into account the audience and nature of the information</p>
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	Patient Centricity
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. work with clients and customers (that is, any individual who uses or receives the services or products that unit produces, including the general public, individuals who work in the agency, other agencies, or organisations outside the Government)</p> <p>SB6. assess their needs, provide information or assistance, resolves their problems, or satisfies their expectations; knows about available products and services; is committed to provide quality products and services</p>
	Problem Solving
	<p>The user/ individual on the job needs to know and understand how to:</p>

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	SB7. detect the fault and take corrective measures
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. analyse information and use logic to address work-related issues and problems
	Critical Thinking
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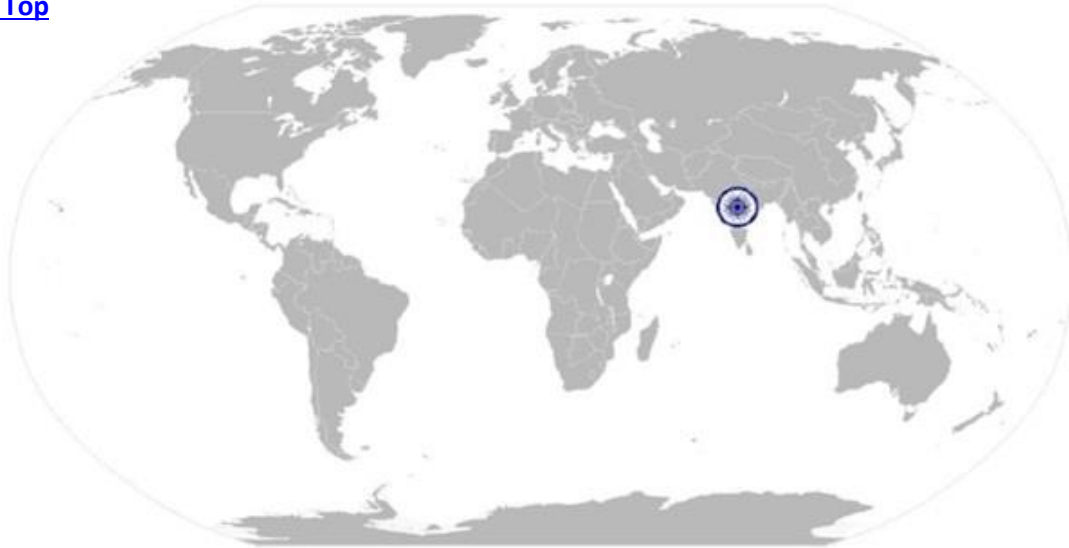


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NOS Version Control

NOS Code	HSS/N5619		
Credits (NSQF)	TBD	Version number	2.0
Sector	Healthcare	Drafted on	31/07/15
Industry Sub-sector	Allied Health and Paramedics	Last reviewed on	15/05/17
Occupation	Non-Direct Care	Next review date	15/05/20

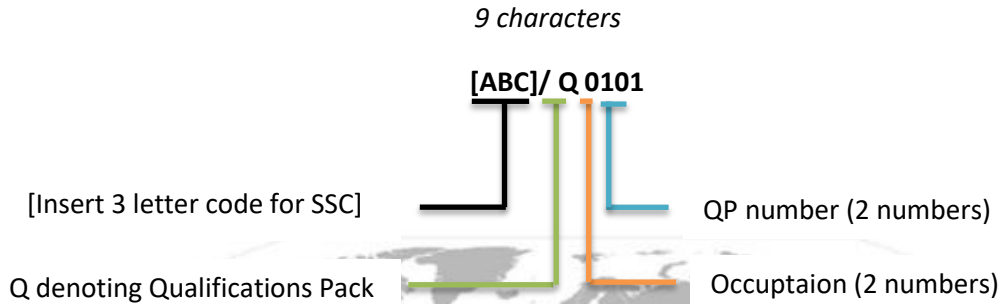
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Annexure

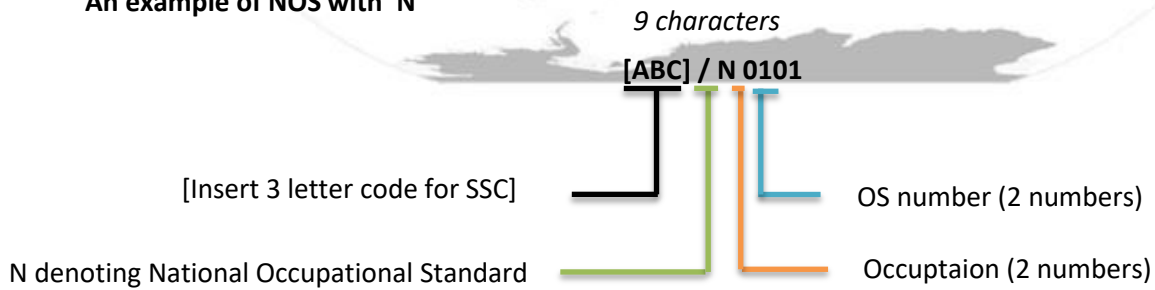
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

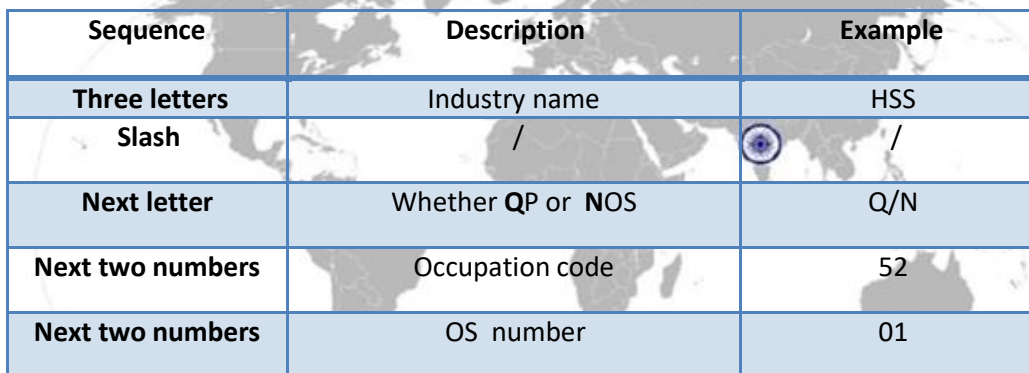
An example of NOS with 'N'



Qualification Pack For Medical Equipment Specialist

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

Sub-sector	Range of Occupation numbers
Diagnostic	01-20
Curative Services	21-50
Non-direct Care	51-75
Community Related	76-85
Generic/General Health	96-99



Sequence	Description	Example
Three letters	Industry name	HSS
Slash	/	/
Next letter	Whether QP or NOS	Q/N
Next two numbers	Occupation code	52
Next two numbers	OS number	01

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Qualification Pack For Medical Equipment Specialist
CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Medical Equipment Technician (MET) – Basic

Qualification Pack: HSS/Q5602

Sector Skill Council: Healthcare Sector Skill Council

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, as well as the selected elective NOS/set of NOS.
OR
3. Assessment will be conducted for all compulsory NOS, as well as the selected optional NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Skills Practical and Viva (80% weightage)	
	Marks Allotted
Grand Total-1 (Subject Domain)	400
Grand Total-2 (Compulsory NOS)	10
Grand Total-3 (Soft Skills and Communication)	90
Grand Total-(Skills Practical and Viva)	500
Passing Marks (80% of Max. Marks)	400
Theory (20% weightage)	
	Marks Allotted

Qualification Pack For Medical Equipment Specialist

Grand Total-1 (Subject Domain)	80
Grand Total-2 (Soft Skills and Communication)	20
Grand Total-(Theory)	100
Passing Marks (50% of Max. Marks)	50
Grand Total-(Skills Practical and Viva + Theory)	600
Overall Result	Criteria is to pass in both theory and practical individually. If fail in any one of them, then candidate is fail
Detailed Break Up of Marks	Skills Practical & Viva

