

# **MBEYA UNIVERSITY OF SCIENCE AND TECHNOLOGY**



## **LABORATORY AND WORKSHOP POLICY**

**AUGUST 2023**

## **FOREWORD**

Mbeya University of Science and Technology (MUST) is among universities in Tanzania which strive to enhance their contribute to the achievement of the national development goals. The Laboratory and Workshop Policy is geared towards attaining the targets of the Development Vision 2025, which among others, requires Tanzania to become a nation with educated people sufficiently equipped with appropriate knowledge and skills to solve societal challenges, meet the challenges of development and attain competitiveness at regional and global levels.

I am delighted to introduce this forward-looking Policy which is designed to revolutionize the way we approach teaching, research, consultancy and income generation. By acknowledging the dynamic landscape in which laboratories and workshops operate, this Policy seeks to address the evolving needs of our stakeholders while aligning with the broader goals of our institution and society at large.

Fostering collaboration, creativity and continuous improvement unlocks potential in laboratories and workshops. Investing in equipment, maintenance, calibration and training ensures success. Moreover, the Policy recognizes that the pursuit of excellence extends beyond the boundaries of academia. By actively engaging with industrial partners, governmental organizations and the wider community, laboratories and workshops can become vibrant hubs for consultancy services, knowledge transfer and income generation. Through collaborative projects, technology transfer initiatives, and commercialization efforts, we can bridge the gap between theoretical research and real-world applications, fostering economic growth and societal impact.

As we embark on this transformative journey, let us do so with a shared commitment to excellence, collaboration and innovation. Together, let us harness the power of laboratories and workshops to inspire, educate, and empower future generations of scientists, researchers, and entrepreneurs. By embracing the principles outlined in this Policy, we have the opportunity to

reshape the landscape of laboratory and workshop services, driving positive change and making a lasting impact.

Prof. Aloys N. Mvuma

**Vice Chancellor**

**Mbeya University of Science and Technology**

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## **LIST OF ABBREVIATIONS**

<b>DVC-ARC</b>	Deputy Vice Chancellor - Academic, Research and Consultancy
<b>DVC-PFA</b>	Deputy Vice Chancellor - Planning, Finance and Administration
<b>GLP</b>	Good Laboratory Practices
<b>MIST</b>	Mbeya Institute of Science and Technology
<b>MTC</b>	Mbeya Technical College
<b>MUST</b>	Mbeya University of Science and Technology
<b>MRCC</b>	MUST Rukwa College Campus
<b>NACTE</b>	National Accreditation Council for Technical Education
<b>OSHA</b>	Occupational Safety and Health Administration
<b>SOP</b>	Standard Operating Procedure
<b>TCU</b>	Tanzania Commission for Universities
<b>VC</b>	Vice Chancellor

## **DEFINITION OF KEY TERMS AND CONCEPTS**

**Laboratory:** A dedicated work space with specialized equipment, instruments, and facilities where scientific-based experiments, tests, analysis, simulations and investigations are conducted.

**Workshop:** A space where practical activities, hands-on learning, training, fabrication and manufacturing activities take place. It is typically designed to accommodate a group of individuals engaged in activities such as skill development, problem-solving, creative endeavors and the construction, repair or maintenance of objects or projects.

**Standard Operating Procedures (SOPs):** Detailed step-by-step instructions that outline the processes and protocols to be followed for specific laboratory or workshop operations.

**Good Laboratory Practices (GLP):** Set of principles and guidelines that define the standards for conducting laboratory activities to ensure data integrity, reliability and reproducibility.

**Quality Assurance:** Involves structured activities and processes that involve monitoring of inputs, processing, product and draw improvement plan that ensures that products, services or operations meet specified quality standards and requirements.

**Quality Control:** Processes and procedures used to monitor and maintain the quality and consistency of laboratory or workshop operations, including testing, calibration and proficiency testing.

**Income generation:** Activities or strategies employed to generate revenue or income.

**Compliance:** Adherence to laws, regulations, standards, guidelines and

policies relevant to laboratory and workshop operations.

**Risk Assessment:** Systematic evaluation and identification of potential risks, hazards, and vulnerabilities associated with laboratory and workshop activities.

**Security:** Measures implemented to protect personnel, equipment, facilities and sensitive information from unauthorized access, theft, damage or misuse.

**Access Control:** Procedures and mechanisms put in place to regulate and restrict access to laboratory and workshop areas, ensuring that only authorized personnel can enter.

**Safety Culture:** The shared attitudes, values, and practices within an organization that prioritize safety and promote a safe working environment.

**Training and Competency:** Programmes and activities aimed at providing the necessary skills, knowledge and competencies to laboratory and workshop personnel to perform their duties effectively and safely.

**Documentation and Record keeping:** The practice of maintaining accurate and complete records of laboratory or workshop activities, including test results, procedures, incidents and corrective actions.

**Equipment Calibration:** The process of comparing the accuracy of a measuring instrument or device against a known standard to ensure reliable and accurate measurements.

**Continuous Improvement:** An ongoing effort to enhance laboratory and workshop operations through the identification and implementation of improvements in processes, procedures and quality management systems.

**Non-Conformance:** Deviations from established procedures, standards or



requirements which may require investigation, corrective actions and preventive measures.

**Audit:** Systematic and independent examination of laboratory or workshop operations to assess compliance with policies, procedures, regulations and quality standards.

**Entrepreneurship:** Undertakings of new initiatives which are innovative and creative that lead to creation of new value, wealth, commercial enterprises and profit.

## **CHAPTER ONE**

### **BACKGROUND INFORMATION OF THE UNIVERSITY**

#### **1.1 Introduction**

Mbeya University of Science and Technology (MUST) is a result of two successive transformations. The first involved the transformation of the then Mbeya Technical College (MTC) which was established in the 1986 to Mbeya Institute of Science and Technology (MIST) in 2005. MTC was offering four Full Technician Certificate programmes in the fields of civil, mechanical, and electrical engineering as well as architecture. The second involved transformation of MIST to Mbeya University of Science and Technology (MUST) through a Charter of Incorporation by the President of the United Republic of Tanzania as stipulated in Section 25 of the Universities Act No.7 of 2005 and Article 3-(1) of the Mbeya University of Science and Technology Charter (2013). All these transformations were responses by the government to increase the number of technical experts who are responsive to the various human resource requirements. Up to this end, several programmes for diploma, bachelor and postgraduate studies are being offered. In addition, there are facilities including workshops and laboratories that need to be effectively managed.

#### **1.2 Vision**

To become the leading centre of excellence for knowledge, skills and applied education in science and technology.

#### **1.3 Mission**

To develop academically, technologically and socially competent students, staff and other stakeholders who will be responsive to the broader needs and challenges of the society specified through the following objectives:

- (i) Facilitating appropriate tuition, practical training and support according to the needs of students and other customers;
- (ii) Encouraging staff commitment to quality education and services including research, consultancy and innovation;

- (iii) Fostering lifelong learning, honesty and responsibility;
- (iv) Promoting environment conducive for human development; and
- (v) Promoting effective entrepreneurship and usage of appropriate technology that meet national and international needs and standards through skills and practical oriented training, research and consultancy.

#### **1.4 Strategic Mandate**

Strategic mandate of the University is derived from the phrase “Science and Technology” in its name. This mandate is to provide tertiary and higher education, promote technology development, undertake research and consultancy, disseminate knowledge and foster relationships with other agencies for development of the nation.

#### **1.5 Motto**

Endeavoring to Lead in Science and Technology.

#### **1.6 Situational Analysis of Laboratories and Workshops Services**

Since the establishment of MUST and the inherited workshops and laboratories from previous institution setups and those acquired when MUST Rukwa Campus College (MRCC) was established, there is no approved mechanism that guides their operations and sustainability. Recently the University constructed new science laboratories and workshops and installed new the state-of-the-art equipment that need to be appropriately managed. In addition, the University intends to continue erecting more laboratories and workshops to meet the current demand for education facilities. These and future facilities need to be sustainably managed.

#### **1.7 Justification**

The United Nations Industrial Development Organization (UNIDO) in 2021 developed the Laboratory Policy: A Guide to Development and Implementation that support the Sustainable Development Goals 2030 by providing mechanism for managing laboratories and workshops. In 2011, the World Health Organization provided the Development of National Health Laboratory

Policy and Plan that aims at providing guidance to health laboratories. In Tanzania, the Government Chemist Laboratory Authority Act No. 8 of 2016 enabled the establishment of the Government Chemist Laboratory as the supreme and referral laboratory on all matters related to forensic science and DNA services, product quality and chemicals management. In line with this, the University needs to develop mechanisms for managing the workshops and laboratories and this is the subject of this policy.

## **CHAPTER TWO**

### **POLICY BACKGROUND INFORMATION**

#### **2.1 Introduction**

Laboratories and workshops have been used not to their full potential and might have caused the University to lose opportunities that could have promoted income generation. Currently laboratories and workshops are only used for facilitating teaching and learning processes as indicated in the various programme curricula. However, there is a need to extend the scope of laboratories and workshops services to be used for tailor made training, research, consultancy and product development from University students, staff and customers from all over the world. In such circumstances laboratories and workshops should be considered as the source of income generation for the University and remuneration to the staff who will be involved. However, proper management is required so that the intended purposes are realised.

This Policy aims to provide a smooth operation of laboratories and workshops in a manner that teaching and learning is not affected and financial contribution of the laboratories and workshops to the University is realized.

#### **2.2 Vision of Laboratory and Workshop Services**

To become a reputable world-class laboratory and workshop centre for science, engineering and technology innovations.

#### **2.3 Mission of Laboratory and Workshop Services**

To provide quality and cost-effective laboratory and workshop services through teaching and learning, research, consultancy and outreach services while imparting skills and competences to students, researchers, public institutions and general community for improving education and good research findings.

## **2.4 Goal**

Laboratory and Workshops Policy will help in achieving the following:

- (i) Facilitate teaching and learning processes as indicated in the various programmes curricula as well as income generation;
- (ii) Facilitate research and consultancy by MUST staff using state-of-the-art laboratory and workshop infrastructures of the highest standards available;
- (iii) Generate the best quality analytical data and processes (accuracy, reliability);
- (iv) Provide effective customer service delivery that meets client's satisfaction;
- (v) Carry out documentation needed to ensure quality assurance, security of data, confidentiality and compliance;
- (vi) Achieve and maintain a level of quality, which enhances the institution's reputation nationally and internationally;
- (vii) Maintain an effective quality assurance system complying with Standard Operational Procedures (SOP) and Good Laboratory Practice (GLP) that is of international recognition and comparable with state-of-the-art laboratories and workshops worldwide;
- (viii) Ensure compliance with relevant legal, regulatory and safety requirements; and
- (ix) Acquire and maintain accreditation.

## **2.5 Objective**

### **2.5.1 General Objective**

To provide a framework and guiding principles to improve laboratory and workshop services.

### **2.5.2 Specific objectives**

Specifically, the Policy aims to:

- (i) Ensure that laboratories and workshops have adequate and competent personnel for efficient and effective service provision;
- (ii) Ensure that laboratories and workshops receive appropriate

- equipment, supplies and services in a timely and financially responsible manner and of acceptable quality;
- (iii) Establish robust security measures to protect laboratory and workshop facilities, personnel, equipment and sensitive information from unauthorized access, theft, damage, or misuse;
  - (iv) Establish a comprehensive equipment installation, testing, and calibration policy within laboratory and workshop services to ensure accurate and reliable measurements, adherence to quality standards and optimal equipment performance;
  - (v) Establish clear guidelines and procedures for laboratory operations to ensure safety, efficiency, accuracy and quality in the laboratory and workshop environment;
  - (vi) Establish effective income generation mechanisms for laboratory and workshop facilities to support their maintenance, upgrade and expansion while also fostering innovation and research;
  - (vii) Establish a robust internal and external quality auditing system to ensure adherence to quality standards, compliance with regulations, and continuous improvement of laboratory and workshop operations;
  - (viii) Establish effective partnership and collaboration mechanisms for laboratory and workshop facilities to foster knowledge exchange, enhance research outcomes, optimize resource utilization, and promote innovation;
  - (ix) Provide a safe and effective working environment for laboratories and workshops staff, students, visitors, external customers and general community for efficient productivity;
  - (x) Establish robust documentation and records management practices in laboratory and workshop services to ensure accurate, accessible, and secure records for effective operations, compliance and knowledge preservation; and
  - (xi) Ensure adherence to relevant regulations, standards and best practices.

## **2.6 Philosophy**

The philosophy of this Policy turns around the core principles of safety, efficiency, responsibility and continuous improvement.

## **2.7 Scope**

The Policy shall apply to all member of staff, students, institutions, partners, collaborators and customers in all University laboratories and workshops, Main Campus and MRCC. Moreover, the Policy shall apply to all activities and programmes in education, training, research, consultancy, innovations and community services at all levels of the University.



## **CHAPTER THREE**

### **POLICY ISSUES, STATEMENTS AND STRATEGIES**

#### **3.1 Introduction**

This Policy has the following issues to be addressed: training; procurements; laboratory and workshop security; laboratory and workshop equipment installation, testing and calibration; laboratory and workshop operations; income generation; internal and external quality auditing; partnership and collaboration; occupational health and safety management; and documentation and records management. Furthermore, the Policy provides guiding statements and strategies.

#### **3.2 Policy Issues, Statements and Strategies**

##### **3.2.1 Training**

###### **3.2.1.1 Policy Issue**

This Policy recognizes that the successful management and operation of a laboratory and workshop is highly dependent on qualified and/or accredited personnel working within the framework of this Policy. Tailor made trainings that impart laboratory and workshop staff with the necessary knowledge, skills, and competencies is an integral part of the successful management and operation of laboratories and workshops. The strategies highlighted below are proposed to improve the productivity of laboratory personnel.

###### **3.2.1.2 Policy Statement**

The University shall support or coordinate regular training to laboratory and workshop personnel in disciplines that are appropriate for successfully carrying out the Institution's Mission and Vision.

###### **3.2.1.3 Strategies**

The University shall:

- (i) Establish an inventory of laboratory and workshop personnel and their respective qualifications and training needs;

- (ii) Identify staff training needs for the various laboratory and workshop staff involved in testing activities and result generation, competence criteria for various tasks, how staff are considered competent, and how this is recorded;
- (iii) Develop training programmes relevant to laboratory and workshop functions for skills development;
- (iv) Ensure that capacity to maintain the state-of-the-art equipment is developed e.g., through enhanced training of technical staff and users; and
- (v) Ensure gender balance in the training opportunities.

### **3.2.2 Procurements**

#### **3.2.2.1 Policy Issue**

There is a need of timely procurement of quality laboratory and workshop equipment, consumables, services and labour (such as maintenance) to allow smooth running of the laboratory and workshops.

#### **3.2.2.2 Policy statement**

The University shall ensure that any procurement is in compliance with the prevailing Public Procurements Act and Regulations.

#### **3.2.2.3 Strategies**

The University shall:

- (i) Create an inventory of laboratory and workshop equipment, consumables, services, labour and their respective procurement plans;
- (ii) Identify technical staff who will control procured materials in each laboratory or workshop;
- (iii) Ensure that all common or general-purpose use consumables need to be readily available in laboratory and workshop rather than needing to be purchased in each particular time when needed to avoid activity delays;
- (iv) Adhere to Public Procurement Act and regulations;

- (v) Ensure quality of laboratory and workshop materials by proper selection of suppliers, verification of supplies and good storage of supplies;
- (vi) Ensure that the purchase of services and consumables is performed by the Procurement Management Unit support and the laboratory provides specifications;
- (vii) Make sure the labels on the instruments and reagents on receipt match with the order;
- (viii) Ensure that all laboratory equipment have a specific inventory number and that a list is maintained in the laboratory and workshop service file; and
- (ix) Involve key experts in the respective areas in the inspection and testing of the ordered laboratory and workshop equipment, media and reagents.

### **3.2.3 Laboratory and Workshop Security**

#### **3.2.3.1 Policy Issue**

University laboratories and workshops have expensive facilities. Therefore security need to be implemented for protection of personnel, facilities and information.

#### **3.2.3.2 Policy Statements**

The University shall:

- (i) Control access, laboratory and workshop areas will be restricted to authorized personnel only;
- (ii) Implement physical security measures including alarm systems, video surveillance and secure storage areas to protect equipment, materials and sensitive information;
- (iii) Provide training to personnel on security protocols, emergency procedures and the proper handling of security incidents;
- (iv) Implement measures to protect sensitive information, such as intellectual property, research data, client information and

- confidential records;
- (v) Establish data security protocols, including secure storage, password protection, encryption and regular backups;
  - (vi) Train personnel on information security best practices, including data handling, secure communication and awareness of phishing and social engineering threats; and
  - (vii) Implement robust personnel screening process, including background checks and reference verifications, for all individuals with access to laboratory and workshop areas.

### **3.2.3.3 Strategies**

The University shall:

- (i) Conduct a comprehensive security risk assessment to identify potential threats, vulnerabilities, and weaknesses in the laboratory and workshop facilities;
- (ii) Install and maintain appropriate security infrastructure, such as access control systems, surveillance cameras, alarms and secure storage facilities;
- (iii) Regularly test and evaluate the effectiveness of security systems and make necessary upgrades or improvements;
- (iv) Develop and implement protocols for the maintenance and repair of security infrastructure to ensure their continuous functionality;
- (v) Conduct regular security awareness training sessions for all laboratory and workshop personnel to educate them on security policies, procedures and best practices; and
- (vi) Establish protocols for reporting security incidents and responding promptly to security breaches, thefts, or unauthorized access.

### **3.2.4 Laboratory and Workshop Equipment Installation, Testing and Calibration**

#### **3.2.4.1 Policy Issue**

Laboratory and workshop equipment installation, testing and calibration is

mandatory.

#### **3.2.4.2 Policy Statement**

The University shall establish and maintain a robust equipment installation, testing and calibration framework to support the accuracy, reliability and quality of measurements and experiments.

#### **3.2.4.3 Strategies**

The University shall:

- (i) Develop Equipment Installation Guidelines;
- (ii) Develop standardized testing and validation protocols for newly installed equipment;
- (iii) Develop a comprehensive calibration schedule that outlines the frequency and methods for calibrating each type of equipment;
- (iv) Ensure that calibration procedures are well-documented and equipment calibration records are maintained;
- (v) Clearly define the procedures for equipment calibration, including the selection of appropriate calibration standards, calibration methods and calibration traceability.
- (vi) Provide training and development opportunities to laboratory and workshop staff members involved in equipment installation, testing and calibration;
- (vii) Offer workshops, seminars, and hands-on training sessions to enhance knowledge and skills in equipment handling, testing, and calibration techniques;
- (viii) Encourage professional certifications and continued education to ensure competency in this critical area;
- (ix) Develop procedures for routine maintenance, inspection and repair of equipment. Ensure that preventive maintenance schedules are in place and equipment maintenance records are maintained;
- (x) Clearly define the roles and responsibilities of technicians and staff members in equipment maintenance and repair activities;
- (xi) Consider obtaining external accreditation for the laboratory or

- workshop services;
- (xii) Implement a system for ongoing monitoring and quality assurance of equipment performance;
  - (xiii) Maintain accurate and comprehensive documentation and records related to equipment installation, testing, calibration, maintenance and repair;
  - (xiv) Establish a centralized database or electronic system for storing and retrieving equipment-related documents, including installation records, calibration certificates, maintenance logs and repair history;
  - (xv) Foster a culture of continuous improvement and innovation in equipment installation, testing and calibration practices; and
  - (xvi) Encourage staff members to explore emerging technologies, implement process enhancements and seek opportunities for automation and digitalization to improve efficiency and accuracy.

### **3.2.5 Laboratory and Workshop Ownership and Operations**

#### **3.2.5.1 Policy Issue**

There is a need of ensuring effective laboratory and workshop operations. It should be noted that all laboratories and workshops belong to Mbeya University of Science and Technology. Colleges, Directorates, Centres and Departments are entitled to manage and oversee all activities conducted in respective laboratories and workshops. All correspondence should be addressed to the office of the Vice chancellor.

#### **3.2.5.2 Policy Statements**

The University shall:

- (i) Establish clear guidelines and procedures for all laboratory and workshop operations, including student practical supervision, sample handling, testing procedures, equipment usage, data management and reporting;
- (ii) Ensure that access to laboratory and workshop equipment and reagents for teaching purpose (staff and students) during working

hours is for free. But for research purposes, they will be charged fees as source of income generation;

- (iii) Allocate technical staff to respective laboratory or workshop to allow specialization. Reallocation will be allowed where necessary;
- (iv) Establish clear guidelines and procedures for hosting industrial practical training for students in respective laboratories and workshops;
- (v) Define and enforce safety protocols, including personal protective equipment (PPE) requirements, emergency procedures and hazardous materials handling;
- (vi) Establish documentation and record-keeping practices to maintain traceability, integrity and confidentiality of laboratory data;
- (vii) Ensure compliance with applicable laws, regulations and industry standards;
- (viii) Implement training programmes to ensure that laboratory and workshop personnel possess the necessary skills and knowledge to perform their duties effectively and safely;
- (ix) Provide adequate laboratory and workshop equipment, instruments and resources to support the required testing and analysis;
- (x) Implement adequate inventory management practices to ensure the availability of necessary supplies and reagents;
- (xi) Encourage sharing of laboratory and workshop equipment and supplies within the university for optimal use;
- (xii) Identify obsolete or malfunctioning equipment and replace or repair promptly;
- (xiii) Implement quality assurance programmes, including internal quality controls and external proficiency testing to monitor the accuracy and precision of laboratory and workshop testing;
- (xiv) Establish quality control procedures to ensure that all testing meets established quality standards and specifications;
- (xv) Identify and investigate non-conforming results and deviations from quality standards and address promptly; and

- (xvi) Implement continuous monitoring and improvement initiatives to enhance the quality and reliability of laboratory and workshop operations.

### **3.2.5.3 Strategies**

The University shall:

- (i) Establish comprehensive SOPs for all laboratory and workshop operations, clearly defining step-by-step procedures, safety measures and quality requirements;
- (ii) Regularly review and update SOPs to reflect current best practices, regulatory changes and emerging technologies;
- (iii) Ensure that SOPs are readily accessible to laboratory personnel and provide appropriate training on their implementation;
- (iv) Promote a culture of safety within the laboratory and workshop, emphasizing the importance of following safety protocols and using proper PPE;
- (v) Provide orientation to all laboratory and workshop users (including new staff) to ensure proper use of equipment to ensure its durability;
- (vi) Conduct regular safety training sessions to ensure that all personnel are aware of potential hazards and emergency procedures;
- (vii) Encourage reporting of safety incidents and near-misses to identify areas for improvement and implement corrective actions;
- (viii) Adopt a quality management system to ensure compliance with international quality standards for laboratory operations;
- (ix) Establish quality control measures, including regular proficiency testing, internal audits and equipment calibration;
- (x) Monitor and maintain the accuracy and reliability of laboratory and workshop results;
- (xi) Implement a document control system to manage SOPs, protocols and other relevant documentation;
- (xii) Develop a comprehensive training programmes for laboratory personnel, covering technical skills, safety protocols, quality



- assurance and data management;
- (xiii) Encourage participation in conferences, workshops and seminars to stay updated on the latest developments in laboratory practices and technologies; and
  - (xiv) Support staff members in obtaining relevant certifications and qualifications to enhance their professional competence.

### **3.2.6 Income Generation for Sustainability**

#### **3.2.6.1 Policy Issue**

The University has advanced laboratories and workshops that can be used for research, collaboration, consultancy and product development as income generating activities. Therefore, there is a need to have a policy to guide how income will be generated and used for sustainability.

#### **3.2.6.2 Policy Statement**

The University shall diversify revenue streams, promote entrepreneurship and optimize the utilization of existing resources, thereby ensuring the sustainability and growth of laboratory and workshop facilities.

#### **3.2.6.3 Strategies**

The University shall:

- (i) Foster partnerships with industries and businesses to provide specialized services, training and research collaborations. This can include offering testing and analysis services, prototype development, technology transfer and consulting services;
- (ii) Develop a rental structure for laboratory and workshop facilities to university staff, students and external entities, such as research organizations, startups and students. This can include providing access to equipment, tools and technical support for a fee. University staff and students will be charged less compared to external customers to promote research and consultancy;
- (iii) Establish remuneration scheme including risk allowances for

laboratory and workshop staff taking part in income generation activities as motivation, attraction and retention of good technical personnel;

- (iv) Offer specialized training programmes and workshops on relevant technical skills and tools. These can be designed for industry professionals, researchers, students and the general public. Charging a fee for these programmes can generate income while promoting knowledge sharing;
- (v) Actively seek and apply for grants, funding and research projects from government agencies, private foundations and industry partners. This can provide additional financial resources to support the laboratory and workshop activities;
- (vi) Implement strategies to identify, protect and commercialize intellectual property resulting from research conducted in laboratory and workshop facilities. This can involve patenting inventions, licensing technology and creating spin-off companies;
- (vii) Encourage researchers and students to explore commercialization opportunities for their innovations developed within the laboratory and workshop facilities. This can involve supporting entrepreneurship, startup incubation programmes and connecting researchers with investors and industry networks;
- (viii) Establish a feedback mechanism to gather input from facility users, industry partners and stakeholders to identify areas for improvement. This feedback can be used to refine services, enhance customer satisfaction and attract more users;
- (ix) Create marketing strategies to advertise laboratory and workshop facilities' capabilities and services. This can include developing a website, hosting open houses, attending industry conferences and utilising social media platforms to reach a larger audience;

- (x) Regularly assess and optimize the utilization of laboratory and workshop resources to maximize efficiency. This can involve tracking equipment usage, implementing scheduling systems and identifying areas where resources can be shared or pooled; and
- (xi) Establish a transparent financial management system to track income, expenses, and investments related to the laboratory and workshop facilities. Regular financial analysis will help ensure the sustainability of income generation initiatives and support informed decision-making.

### **3.2.7 Internal and External Quality Assurance**

#### **3.2.7.1 Policy Issue**

There is a need of ensuring quality standards in laboratory and workshop operations.

#### **3.2.7.2 Policy Statements**

The University shall conduct:

- (i) Regular internal audits by qualified personnel to assess the compliance of laboratory and workshop operations with established quality standards, protocols and procedures. Audit findings and corrective actions will be documented, tracked and communicated to the relevant stakeholders; and
- (ii) Periodic external audit by independent qualified auditors to assess the laboratory and workshop operations against regulatory requirements and industry best practices. Audit findings will be documented and recommendations for corrective actions will be communicated to management for follow-up.

#### **3.2.7.3 Strategies**

The University shall:

- (i) Develop a comprehensive internal audit plan that outlines the frequency, scope and objectives of internal audits;

- (ii) Identify and train internal auditors who possess the necessary expertise and knowledge to perform audits effectively;
- (iii) Establish audit checklists and protocols to ensure consistent and thorough assessment of laboratory and workshop operations;
- (iv) Implement a system for documenting audit findings, tracking corrective actions and monitoring their implementation;
- (v) Promote a culture of continuous improvement by sharing audit results, lessons learned and best practices with relevant staff members;
- (vi) Identify reputable external auditing agencies or consultants with expertise in laboratory and workshop quality standards;
- (vii) Establish a periodic schedule for external audits to ensure regular assessments of compliance;
- (viii) Collaborate with external auditors to provide them with necessary access and information for conducting the audits;
- (ix) Respond promptly to external audit findings, develop action plans to address identified non-compliance and monitor their implementation; and
- (x) Foster a cooperative relationship with external auditors to benefit from their expertise and guidance in maintaining quality standards.

### **3.2.8 Partnership and Collaboration**

#### **3.2.8.1 Policy Issue**

There is a need to promote partnership and collaboration in laboratory and workshop **policies** to enhance research, innovation and resource utilization.

#### **3.2.8.2 Policy Statement**

The University aims to create a collaborative ecosystem that facilitates partnerships between academia, industry, government agencies and other

stakeholders. It seeks to foster a culture of cooperation, knowledge sharing and resource pooling to maximize the impact and utilization of laboratory and workshop facilities.

### **3.2.8.3 Strategies**

The University shall:

- (i) Foster partnerships and collaborations between laboratory and workshop facilities and industry stakeholders;
- (ii) Encourage joint research projects, technology transfer initiatives and knowledge exchange programmes;
- (iii) Create agreements that benefit both academia and industry by combining their skills and resources;
- (iv) Facilitate the formation of research consortia and networks involving multiple laboratory and workshop facilities, research institutions and industrial partners;
- (v) Encourage the sharing of expertise, methodologies and best practices;
- (vi) Facilitate collaboration with funding agencies, private foundations and industry sponsors to support joint research projects, infrastructure development and innovation initiatives; and
- (vii) Promote engagement with industry and entrepreneurship within laboratory and workshop.

### **3.2.9 Occupational Health and Safety Management**

#### **3.2.9.1 Policy Issue**

There is a need to provide a safe and healthy environment for laboratory and workshop staff, students and visitors and general community in accordance to national and international safety regulatory boards.

### **3.2.9.2 Policy Statements**

The University shall:

- (i) Develop a set of procedures and guidelines for health and safety promotions;
- (ii) Strive to exceed the legislated requirements by adopting the best practices available to protect laboratory and workshop staff, students, visitors, external customers and the general community and to promote a positive health and safety culture;
- (iii) Maintain a list of health and safety guidelines for laboratories and workshops operations;
- (iv) Have proper safety protocols in place in term of preventive maintenance; and
- (v) Have a proper laboratories and workshops waste management and disposal guidelines and protocol.

### **3.2.9.3 Policy Strategies**

The University shall ensure that:

- (i) Laboratory and workshop personnel are properly trained and provided with appropriate safety and emergency equipment;
- (ii) Laboratory and workshop staff are taking appropriate action to correct hazards or conditions that endanger health, safety or the environment;
- (iii) Laboratory and workshop wastes are managed and disposed of as per guidelines and protocol;
- (iv) Safety and environmental factors in all operation decisions including planning and acquisition are considered;
- (v) Waste generated is reused to minimize the amount and toxicity;
- (vi) Laboratories and workshops staff are encouraged and emphasized to be accountable and comply with standards;
- (vii) Occupational Health and Safety Management System is fully implemented and integrated into all laboratories and workshops operations;

- (viii) Standard operating procedures are available in place for safety of laboratory and workshop personnel and visitors in order to avoid laboratory accident that might occur because of unsafe handling of equipment and chemicals; and
- (ix) Non-hazardous materials are used, if practical.

### **3.2.10 Documentation and Records Management**

#### **3.2.10.1 Policy Issue**

There is a need for documentation and records management in laboratory and workshop services.

#### **3.2.10.2 Policy Statement**

The University shall emphasize the importance of comprehensive and well-maintained documentation and records management practices to support efficient operations, regulatory compliance and knowledge sharing within the institution.

#### **3.2.10.3 Strategies**

The University shall:

- (i) Develop standardized procedures and templates for documentation in laboratory and workshop services, including data collection, experimental protocols, maintenance log books, incident reports and equipment inventories;
- (ii) Ensure consistency and clarity in documenting processes and outcomes;
- (iii) Define guidelines for record retention, specifying the duration and format for different types of records, such as experimental data, reports, safety records and equipment calibration certificates;
- (iv) Consider legal and regulatory requirements when determining retention periods;
- (v) Adopt electronic document management systems to streamline document creation, storage, retrieval and version control;

- (vi) Ensure that the system complies with security and data privacy standards and provides adequate backup and disaster recovery mechanisms;
- (vii) Provide comprehensive training programmes and resources on effective documentation practices, including the importance of accurate and timely record keeping, proper data entry techniques and adherence to regulatory requirements;
- (viii) Foster a culture of accountability and responsibility for documentation among staff members;
- (ix) Implement measures to ensure the integrity and security of laboratory and workshop records. This may include access controls, data encryption, regular data backups and disaster recovery plans;
- (x) Promote awareness of data protection and privacy among laboratory and workshop staff members; and
- (xi) Conduct regular audits of laboratory and workshop records to verify compliance with documentation policies and identify areas for improvement. These audits can help identify gaps, inconsistencies or obsolete records.



## **CHAPTER FOUR**

### **POLICY COMMUNICATION AND IMPLEMENTATION**

#### **4.1 Introduction**

University will ensure that the Laboratory and Workshop Policy is communicated to the key stakeholders and oversee the proper implementation of the Policy to support provision of laboratory and workshop services. This chapter outlines the communication and implementation strategies of the proposed Policy.

#### **4.2 Communication**

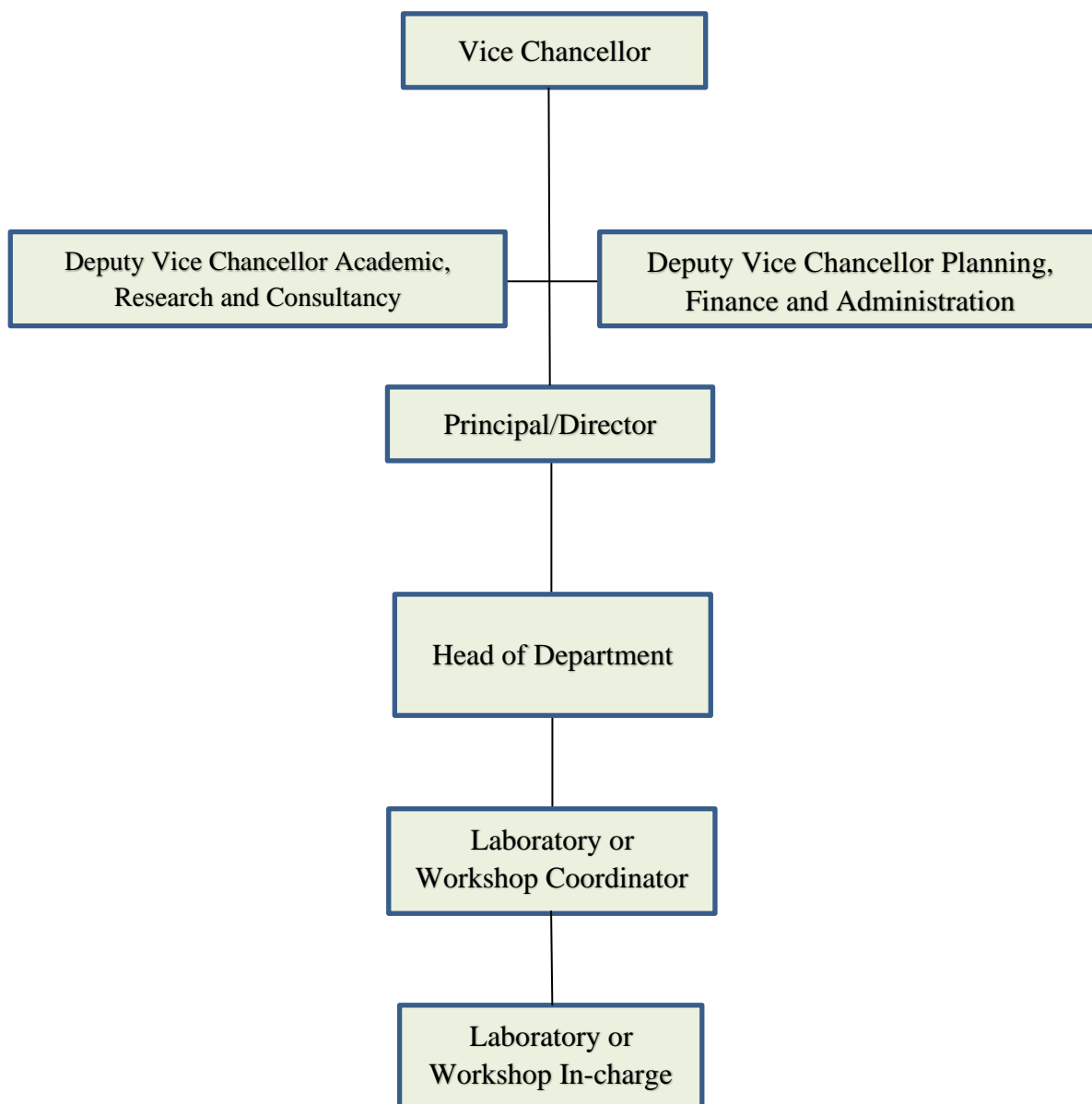
This Policy shall be communicated to all stakeholders and users in a broad array of communication media by University management team through Colleges, Directorates, Centres and Departments running laboratories and workshops.

#### **4.3 Implementation**

Colleges, Directorates, Centres and Departments running laboratories and workshops will be responsible for overseeing the process of Laboratory and workshop Policy implementation in cooperation with College Laboratory and Workshop Coordinators.

#### **4.4 Organizational Structure**

The administrative structure is to define and delegate responsibilities, establish relationships to enable people to work and ensure effective systems and mechanisms for communications. Colleges, Directorates, Centres and Departments are under the office of the Deputy Vice Chancellors whose administrative structure is shown in Figure 1.



**Figure 1: Organizational structure of MUST Laboratories and Workshops**

#### **4.5 Key Responsibilities of Various Actors**

##### **4.5.1 Council**

The Council shall:

- (i) Approve Laboratory and Workshop Policy; and
- (ii) Approve budget for implementation of Laboratory and Workshop Policy.

#### **4.5.2 The Role of the Vice Chancellor**

The Vice Chancellor shall:

- (i) Ensure short-, medium- and long-term implementation of Laboratory and Workshop Policy;
- (ii) Recommend financial and other resources for the implementation of the Policy;
- (iii) Recommend the implementation report; and
- (iv) Approve Laboratory and Workshop guidelines.

#### **4.5.3 The Role of the Deputy Vice Chancellor - Academic Research and Consultancy**

DVC-ARC shall:

- (i) Lead coordination of the Policy implementation strategies;
- (ii) Recommend approval of appropriate Laboratory and Workshop services budgets;
- (iii) Ensure the operationalization of the workplan;
- (iv) Ensure review of the Policy in a recommended time;
- (v) Coordinate and establish Laboratory and Workshop services trainings;
- (vi) Translate the Policy into implementable actions plans; and
- (vii) Coordinate, monitor and evaluate all Laboratories and Workshops-related activities within and outside the University.

#### **4.5.4 Role of Deputy Vice Chancellor - Planning, Finance and Administration**

DVC-PFA shall:

- (i) Mobilize and allocate resources for the implementation of the Policy;
- (ii) Recommend Laboratory and Workshop budgets for the implementation of the Policy; and
- (iii) Ensure design of construction of infrastructures for improved Laboratory and Workshop services.

#### **4.5.5 Role of College Principals and Directors**

Principals and Directors shall:

- (i) Oversee all laboratory and workshop activities in respective College/Directorate;
- (ii) Recommend Laboratory and Workshop budgets for Policy implementation;
- (iii) Coordinate Laboratory and Workshop issues between Departments, DVC-PFA and DVC-ARC;
- (iv) Encourage and support training for Laboratory and Workshops staff;
- (v) Monitor and oversee income generation from Laboratory and Workshops in respective College/Directorate;
- (vi) Ensure availability of Laboratory and Workshop inventory records (chemicals, equipment's and human resources); and
- (vii) Ensure on-time purchases of Laboratory and Workshops requirements.

#### **4.5.6 Roles of Head of Department**

Head of Department shall:

- (i) Prepare Laboratory and Workshop guidelines and Standard Operating Procedures;
- (ii) Manage Laboratory or Workshop facilities and staff;
- (iii) Monitor and oversee income generation in respective department;
- (iv) Recommend laboratory and workshop budgets for policy implementation in respective Department;
- (v) Create and carry out training programme for Laboratory and Workshop staff;
- (vi) Facilitate purchase Laboratory and Workshop services requirements;
- (vii) Ensure that every work done under supervision adheres to the Manual's criteria for quality control;
- (viii) Ensure that all employees under their supervision have the necessary training, credentials, and certifications for the jobs they are performing;
- (ix) Conduct the final evaluation and approve the reports;

- (x) Ensure that all the equipment they are in charge of is installed, maintained and calibrated correctly;
- (xi) Ensure that all subordinate personnel receive training in SOPs, GLP and other specific training, including competency testing;
- (xii) Safeguard the security and privacy of investigation results and client samples and keep an eye on all Laboratory and Workshop work being done;
- (xiii) Take part in the review of the policies for the Laboratory and Workshop quality system; and
- (xiv) Update all documents and records in respective Laboratories and Workshops.

#### **4.5.7 Role of College Laboratory and Workshop Coordinator**

College laboratory or workshop coordinator shall:

- (i) Assist principal or director to manage laboratory or workshop facilities and staff;
- (ii) Develop and implement guidelines and procedures to ensure the safety of employee and quality of data;
- (iii) Oversee the ordering and stocking of supplies for respective laboratories and workshops;
- (iv) Manage laboratory and workshop expenses and budgets;
- (v) Lead a team to decide on an optimal Laboratory and Workshop information management system;
- (vi) Assist Principal or Director in organizing and coordinating Laboratory and Workshop trainings;
- (vii) Maintain records and training for all technical staff and testing results; and
- (viii) Update all documents and records in respective Laboratories and Workshops.

#### **4.5.8 Roles of Laboratory or Workshop In-charge.**

Laboratory or Workshop in-charge shall:

- (i) Supervise the work of technicians in their department;

- (ii) Ensure effective implementation of the quality system in the respective Laboratory or Workshop;
- (iii) Prepare test procedures where necessary;
- (iv) Ensure the quality of test results generated;
- (v) Update all documents and records in the respective Laboratory or Workshop;
- (vi) Prepare the budget of the Laboratory or Workshop;
- (vii) Maintain Laboratory or Workshop personnel records;
- (viii) Ensure all the Laboratory and Workshop staff has the requisite competence and are given responsibilities matching their competence;
- (ix) Prepare and review of all SOPs applicable to his/her Laboratory or Workshop;
- (x) Control and document calibration procedures;
- (xi) Perform daily internal checks;
- (xii) Implement corrective action as applicable
- (xiii) Ensure that the Policy is followed for all work performed in his/her Laboratory or Workshop;
- (xiv) Ensure implementation of all corrective action for all non-conforming procedures, materials, equipment and services.

#### **4.5.9 Other Stakeholders**

The University Management will engage development partners, individuals and other donors to collaborate, assist, advise and sponsor various programmes related to Laboratory and Workshop services for smooth implementation of the Policy.

## **CHAPTER FIVE**

### **MONITORING AND EVALUATION**

#### **5.1 Introduction**

Monitoring and evaluation are the measurement tools for measuring the progress and successes of implementation of any agreed activity. The processes provide the opportunity for the implementers to understand the realities of Laboratory and Workshop operations in the existing work plan. This Chapter, therefore, provides a summary on how Laboratory and Workshop Policy will be implemented. Thus, the link between objectives, strategies, activities, outputs, indicators, responsible person, time frame and budget will be realized.

Monitoring is the systematic process of collecting, analyzing and using information to track a policy progress towards reaching the intended objectives. Evaluation is the systematic assessment of the performance of the implementation of the Policy. Monitoring implementation of this policy will be on biannual and annual basis, to track achievements and identify challenges and to ensure that the implementation and performance reflects the purpose and objectives of the Policy.

Colleges, Directorates and Centres will be responsible for monitoring the implementation plan of this Policy.

#### **5.2 Periodic Evaluation of the Policy**

Colleges, Directorates and Centres shall be responsible for periodic evaluation of this Policy aiming at determining the advocacy, impacts, effectiveness, efficiency and sustainability of interventions and the contribution of the initiatives to the results achieved.

### **5.3 Evaluation Report**

University shall regularly evaluate implementation of this Policy. Evaluation report document shall be shared to all stakeholders. This report will propose if there is a need for Policy review and amendments.

### **5.4 Policy Review and Amendments**

This policy shall be reviewed after every three years after its effective date or as it may deem necessary.



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## **APPROVAL**

At its 38<sup>th</sup> Meeting held on 29<sup>th</sup> day of August 2023, the Mbeya University of Science and Technology Council RECEIVED, DISCUSSED and APPROVED the Laboratory and Workshop Policy.

Hon. Zakia Hamdani Meghji

**MUST COUNCIL CHAIRPERSON**

Prof. Aloys N. Mvuma

**MUST VICE CHANCELLOR**