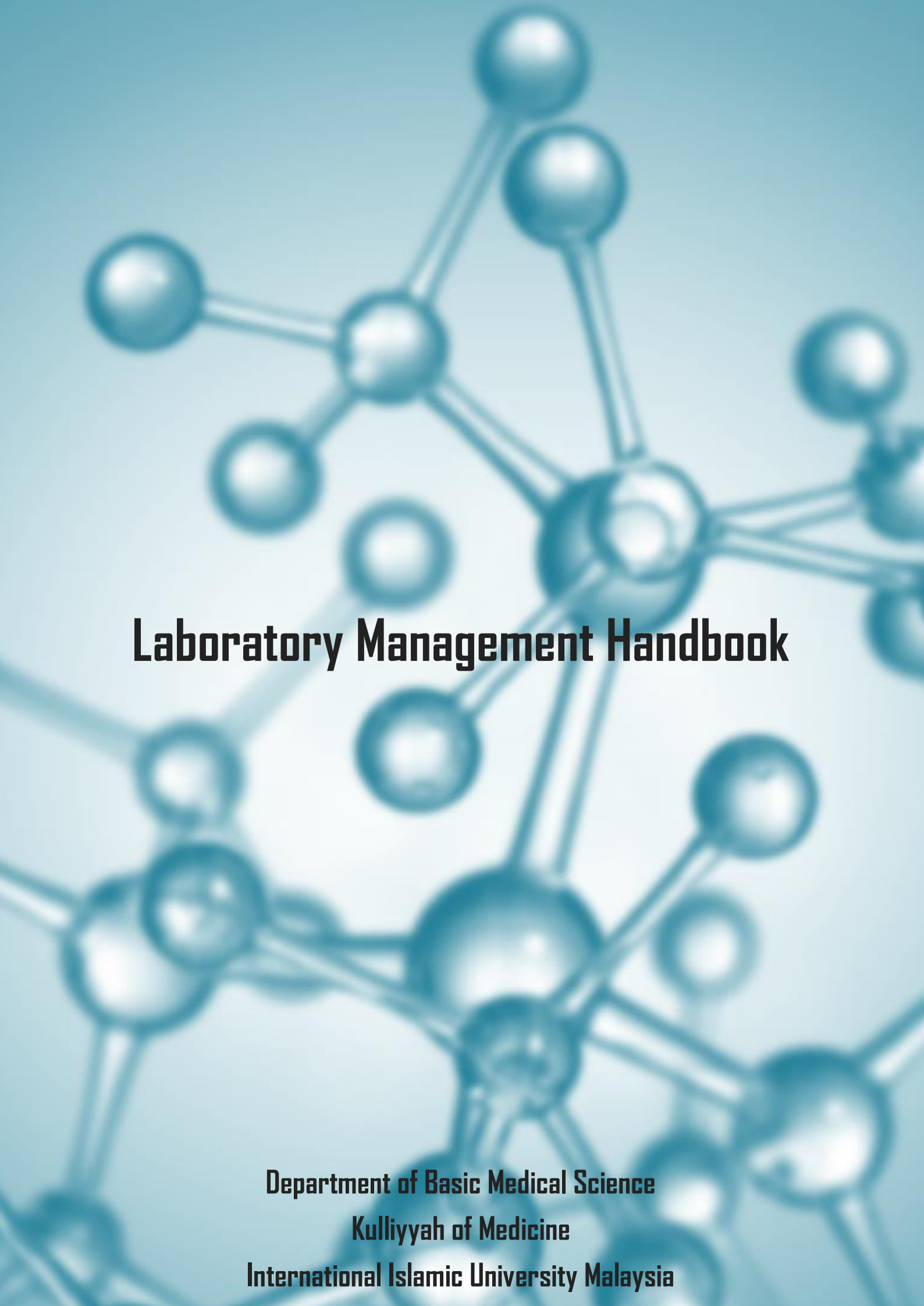

Laboratory Management Handbook

Department of Basic Medical Science
Kulliyyah of Medicine
International Islamic University Malaysia

1.0 INTRODUCTION

The Department of Basic Medical Sciences, Kulliyyah of Medicine, consists of 5 research laboratories and 1 general teaching laboratory;

- Anatomy & Imaging Unit,
- Biochemistry Unit,
- Microbiology Unit,
- Pharmacology & Physiology Unit,
- Molecular & Proteomic Unit,
- Central Teaching Laboratory.

Laboratory Management is a sub-organization under the Department of Basic Medical Sciences, Kulliyyah of Medicine which provides laboratory services mainly to the undergraduates, postgraduates and researchers in terms of routine practical teaching and learning process as well as research.

The Laboratory Management consisting of Laboratory Coordinator, Science Officers (SO), Medical Laboratory Technologists (MLT) and Assistant Science Officers (ASO) are the key personnel assisting lecturers and students in laboratory practical classes and research works.

Laboratory Management staff are experience analytical instrument operators and possess vast knowledge in various research methodologies.

Laboratory Management complies with the guidelines of the Occupational Safety & Health (OSH) certifications.

OSH provides the framework to allow Laboratory Management to achieve zero incidents, injuries, illnesses and property damage.

Attachment A: Laboratory Management Organization Chart (2019)

2.0 PURPOSE

The purpose of this handbook is to serve as a general guideline to all laboratory users when dealing with Laboratory Management,

Contents of this handbook mainly emphasize on the direction of Laboratory Management through administration control to reduce the risk elements associate with health and safety when involving activities related to the laboratory.

It is also intended to generally brief all laboratory users on criteria related to OSH adopted at the Department of Basic Medical Sciences, Kulliyyah of Medicine.

3.0 SCOPE

Laboratory Management rules, regulations, procedures and existing guideline are applied to laboratories personnel, lecturers, students and any other involve parties when dealing with laboratory staff or utilizing facilities at the Department of Basic Medical Sciences, Kulliyyah of Medicine.

4.0 GENERAL RULES

4.1 Operational Hours and Common Rules

Operational Hours

During weekdays, laboratory normal operation hours are;

Day	Operation Hours
Monday - Thursday	0800 hour – 1300 hour 1400 hour – 1700 hour
Friday	0800 hour – 1215 hour 1445 hour – 1700 hour

All laboratories will be closed during weekends and on public holidays.

It is understandable that the nature of research activity may require working beyond normal office working hour.

Any other requirements to facilitate either laboratory facilities or staff beyond normal working hours or during weekends / public holiday require further approval from the relevant personnel.

Common Rules

Laboratory health and safety depend mostly on laboratory user. Efforts have been made to address situations that may pose a hazard in the laboratory but the information and instructions provided cannot be considered all-inclusive.

Good common sense is needed for safety in a laboratory. It is expected that each laboratory user will work in a responsible manner and exercise good judgment and common sense.

At any time if users are not sure how to handle a particular situation, always seek further clarification from laboratory staff.

Wearing laboratory coat with fully covered shoes is mandatory when entering the laboratory. Long hair, dangling jewellery, and loose or baggy clothing are a hazard in the laboratory. Long hair must be tied back, and dangling jewellery and baggy clothing must be secured.

Foods and drinks are strictly not allowed to be brought into the laboratory.

The usage of mobile phone while working in the laboratory is not encouraged by Laboratory Management. The act may lead to incident occurrence due to the possibility of distraction of user's attention on the present hazard in the laboratory.

4.2 Laboratory Access

Laboratory is considered as an area where accidents could take place easily based on high risk routine activities conducted there. It has become necessary for Laboratory Management to control and monitor access into the laboratory.

Laboratory can be accessed only by authorized personnel who have been granted permission. Laboratory usage will be monitored using a logbook system.

Authorized personnel will be given sufficient information on Laboratory Management where

he/she is obliged to adhere to the laboratory rules and regulations.

It is considered a serious offence when accessing the laboratory without official authorization. The Laboratory Management shall not be liable for any claims in the event of any untoward incident to unauthorized laboratory user.

Currently, laboratories main users are categorized into 3;

User Category	Access Category
Lecturers & Staff	Unlimited Area and Occasion
Post Graduate Student	Limited Area, Unlimited Occasion
Under Graduate Student	Limited Area and Occasion

Users from other kulliyyahs (lecturer/student) are not allowed to utilize any of the laboratories prior to approval from the Dean Kulliyyah of Medicine.

4.3 Instrumentation

Utilization Consensus

Prior to utilizing any instrument available at the Department of Basic Medical Sciences, Kulliyyah of Medicine, consensus from the custodian of the instrument is required.

No person shall operate any instrument without sufficient knowledge. It is always best practice to seek help from the instrument operator pertaining relevant information of the instrument's operational procedures prior to use the instrument. Only competent person is allowed to operate certain high end instruments.

High risk instruments or machines such as electron microscopy are only to be operated by well trained staff. Early arrangement is required between the user and operator to avoid any inconvenient situation.

Instrument Handling

It is a part of user's responsibility to cautiously handle and operate each instrument according to manufacturer's manual or other provided internal procedures.

Appropriate instrument handling and maintenance not only benefits in terms of safety matters, but also help to maintain instrument reliability of analytical integrity.

Instrument Failure

For any instrument failure, user shall notify immediately to laboratory staff. User shall never attempt to fix the problem because it could possibly harm the user and/or others.

Instrument Location

Neither instrument shall be removed nor taken out from its initial pre-determined location unless it has been officially agreed by the current instrument custodian and Laboratory Coordinator.

Service Charge

Service charges can be imposed on several selected instruments utilization within Kulliyyah of medicine eg Electron microscopy.

4.4 Facilities, Chemicals, Consumables, Glassware and Other Request / Booking

In general, the Laboratory Management will provide all teaching and learning materials related to the laboratory activities, including chemicals, consumables, glassware and basic facilities only for MBBS, KOM students.

Facilities Booking

In order to use facility such as animal retention room, arrangement through the relevant laboratory personnel, with the approval of the lecturer-in-charge and Laboratory Coordinator are needed prior to utilization.

Chemicals, Consumables and Glassware Request

Request should be made in advance by any final year project (FYP) students or their project supervisors to Laboratory Management for further arrangement.

It is advisable for the FYP students from other kulliyyahs, together the project supervisors to plan their research needs and requirements as to align with the current facilities and available resources at laboratories.

All chemicals that are brought into the respective laboratories must be declared and be accompanied with the relevant safety data sheet (SDS).

Postgraduate students are not eligible to utilize teaching materials (chemicals, consumables, glassware) provided by Laboratory Management. Any purchases to be made, may be assisted by the Laboratory Management but to be paid using the research grant.

However, utilization of instruments available at Kulliyyah of Medicine is allowed for Postgraduate students when certain terms and conditions are agreed between both parties.

4.5 Field Sampling / Out Campus Data Collection

There will be times field sampling / out campus data collection is needed. This may involve laboratory staff, instruments and facilities.

In such cases, safety matter will always become the first priority to the Laboratory Management.

Official request needs to be submitted to Laboratory Coordinator and relevant Lecturer-in-charge for each field sampling / out campus data collection together with all the needs and requirements list for such occasion for further arrangements.

Each participant (staff and student) involved during the activity, must ensure safety measures are followed at all times.
Laboratory Management will assume that each involved party (organizer) is aware with regards to safety matters. All pre-determine hazards and risks associate to each planned activity should be taken into consideration.

It is also important to ensure each instrument/facility used during the activities will remain intact, handled in appropriate manner and well maintained throughout the process.

In the event the instrument/facility is damaged, the user will be required to pay for the damages incurred.

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4.6 General Good Laboratory Practice (GLP)

As part of integrating quality element in Laboratory Management, it is essential that all laboratory user follow all available procedures at all times in order to achieve the university's quality objectives.

In general, GLP helps Laboratory Management in ensuring the uniformity, consistency, reliability, reproducibility, quality, and integrity of research analytical testing.

Laboratory Management is committed for continuous improvement subject to quality management.

Should there is any complaints from laboratory users which will lead to the deviation from the university quality objectives, the users could lodge the complaint to Laboratory Management for corrective action to be taken.

4.7 Laboratory Housekeeping

In general, all laboratory users should;

- ensure that the floor to be free of hazards; never discard objects, drop objects, or spill material on the floor.
- always keep tables, bench tops, chemical hoods, floor, aisles, and desks clear of all material that are not being used.
- be aware of two clear passageways to exit in the event of an emergency.
- ensure that the emergency showers and eyewashes, fire extinguishers, and electrical panel controls and never obstructed.
- ensure that any frequently used bench apparatus to be kept well away from any edges and secured whenever possible.
- clean the work areas upon completion of an experiment or at the end of each day.
- ensure the bench tops and bench liners are free of visible contamination.

- reduce the risk of slips, trips, and falls by cleaning up liquid or solid spills immediately, keeping doors and drawers closed and passageways clear of obstructions.
- ensure the sharp or pointed tools are properly sheathed or stored.
- hang any clothing in proper locations and not draped over equipment or benches.
- keep the less commonly used equipment in storage.
- not store chemical containers on the floor or in the fume hood.
- not store excess cardboard boxes, equipment boxes, Styrofoam, etc. under lab benches, on shelves, or above shelves/cabinets throughout the laboratory.
- put away clean glassware that are not being used. Avoid accumulating large amounts of dirty glassware on laboratory benches and sinks. Clean them when your experiment is done.
- regularly check glassware for star cracks, chips, or cracks, and promptly discard or repair any unsafe glassware.
- discard disposable pipettes and pipette tips immediately after use.
- properly secure and label all containers of chemicals/experimental intermediates.

Upon completion of laboratory work, Laboratory Management will ensure each working area is clean and all other materials (glassware, unused consumables and excess chemicals) are returned accordingly.

5.0 GENERAL HEALTH AND SAFETY MANAGEMENT SYSTEM

Laboratory users are exposed to many hazards that may affect their health and safety. Awareness of occupational safety and health (OSH) is important in an organization to prevent occupational injuries and diseases at workplace.

Occupational Health and Safety Management System implemented at Kulliyyah of Medicine is based on OHSAS 18001: 2007 & MS 1722: 2011 standards.

The model for the OHSAS standard basically includes;

- OSH Policy
- Planning
- Implementation and Operation
- Checking and Corrective Action
- Management Review
- Continual Improvement

This standard is based on methodology known as **Plan-Do-Check-Act** (PDCA). PDCA can be briefly described as follows;

Plan: establish the objectives and processes necessary to deliver results in accordance with the organization's OSH policy

Do: implement the processes

Check: monitor and measure processes against OHS policy, objectives, legal and other requirements and report the results

Act: take actions to continually improve OHS performance.

5.1 Kulliyyah of Medicine OSH Policy

The OSH policy statement is the foundation of the OSH objectives, targets and plan. This statement can be the driving or destructive force for the entire OSH plan.

It is imperative that the statement be approved by the IIUM's top officials and disseminated to entire IIUM.

Without such a commitment, the OSH plan may be compromised by any opposing viewpoint of any lower tiered manager.

The policy statement must be seen as a policy of the entire organization and not just of the OSH person, the human resource department, or any individual.

Under the requirements of the Occupational Health and Safety Act of 1994, it is the duty of every employer and every self-employed person to prepare and as often as may be appropriate, revise any written statement with respect to the health and safety of his employees and organization as a whole including necessary arrangements to ensure the implementation of any health and safety provisions and to bring the statement and any revision of it to the notice of all employees

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KULLIYYAH OF MEDICINE

OCCUPATIONAL SAFETY AND HEALTH POLICY

The Kulliyyah of Medicine has the vision to be a world class centre of research and learning with values and ethics. We shall always provide and maintain a safe, healthy and clean working environment.

We are fully committed towards:

a) Prevention of human injury and ill health.
b) Continual improvement in OSH management and performance.
c) Compliance with applicable legal and other requirements.
d) Providing adequate resources, facilities and equipment for staff members, students and related personnel.
e) Providing sufficient information, instruction, training and supervision.
f) Awareness of OSH obligations.

The policy shall be documented, implemented, maintained and communicated to all staff members, students and related personnel.

PROF. DR. AZMI MD NOR
Dean
Kulliyyah of Medicine
International Islamic University Malaysia
18/09/2014

5.2 OSH Objectives, Targets and Programme(s)

Objectives	Targets
To maintain compliance on relevant occupational safety and health (OSH) legal and other requirements	100% compliance on relevant OSH legal and other requirements
To promote OSH activities for all relevant parties	90% participant of relevant parties
To prevent occupational injury	Zero Lost Time Injury (LTI)
To prevent occupational illness	Zero Lost Time Illness

6.0 HEALTH AND SAFETY MANAGEMENT

6.1 Risk Management

Hazard Identification, Risk Assessment and Risk Control (HIRARC)

Hazard identification and control are at the heart of the loss-control effort. According to BS OHSAS 18001:2007, hazard means source, situation, or act with a potential for harm in term of human injury or ill health, or a combination of these. Meanwhile, risk means combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can caused by the event or exposure(s)

The methodology for hazard identification and risk assessment shall be defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive.

The procedure for identification of hazards and assessment of risk shall take into account;

- Routine and non-routine (e.g. periodic, occasional or emergency) activities and situations
- Activities of all persons having access to the work place (e.g. customers, subcontractors, service contractors, visitor, delivery staff, staff and students).
- Human behaviour, capabilities and other factors (the nature of the job, the environment, psychological capabilities)

Hazard identification should consider the different types of hazards in the workplace i.e. physical, chemical, biological, ergonomics and psychosocial

List of Possible Hazard

Hazards Type	Hazard
Physical	Slippery or uneven ground leading to slip or falls
	Work at heights, leading to falls
	Objects falling from heights leading to impacts on passers-by
	Inadequate space of work
Chemical	Inhalation (such as carbon monoxide); the hazard will be directly linked to the amount inhaled
	Contact with, or being absorbed through the body (such acids); the hazard will be linked directly to the strength and amount of an acid
	Ingestion (i.e. entering the body via the mouth
Biological	Biological agents such as bacteria or viruses that might be; • inhaled • transmitted via contact with bodily fluids (including needle prick injuries) • ingested, e.g. via contaminated food products
Ergonomic	Repetitive movement while handling bold and nuts
	Manual lifting heavy load
	Uncomfortable workstation height and poor body positioning
	Awkward movements, especially if they are repetitive
Psychosocial	Stress due to excessive workload, lack of communication or control
	Stress due to physical violence, bullying, or intimidation within workplace
	Post- traumatic stress due to an involvement in a major incident
	Sexual harassment at workplace

6.2 Legal and Other Requirements

Occupational health and safety is not the responsibility of just one person but the responsibility of all.

To ensure a formal and formal joint venture take place between the employer, employee management and organization at the highest level, the need has been provided for in the law.

Common Legal Requirements
Occupational Health and safety Act 1994
Occupational Health and safety (Health and Safety Committee) Regulations, 1996
Occupational Health and safety (Prohibition of Use of Substance) Order, 1999
Occupational Health and safety (Use and Standards of Exposure of Chemical Hazardous to Health) Regulations, 2000
Occupational Health and safety (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations, 2004
Occupational Health and safety (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations, 2013
Factories and Machinery Act 1967
Factories and Machinery (Steam Boiler and Unfired Pressure Vessel) Regulations, 1970
Factories and Machinery (Fencing of Machinery and Safety) Regulations, 1970
Factories and Machinery (Safety, Health and Welfare) Regulations, 1970
Factories and Machinery (Notification, Certificate of Fitness and Inspection) Regulations, 1970
Factories and Machinery (Person In-Charge) Regulations, 1970
Factories and Machinery (Building Operations and Works of Engineering Construction) (Safety) Regulations, 1986
Factories and Machinery (Electric Passenger and Goods Lift) Regulations, 1970
Factories and Machinery (Noise Exposure) Regulations, 1989

6.3 Operational Control

6.3.1 Chemical Management

Chemical usage presents as a hazard. As such, part of administration control, Chemical Management becomes one of vital element to control all identified significant risk while dealing with chemicals.

It always becomes laboratory user's responsibility when handling any activity involving chemical usage in the laboratory as per requirements.

Any usage of chemicals that are hazardous to health mainly are required to abide;

- *Occupational Health and Safety (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000 and;*
- *Occupational Health and Safety (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013*

Prior to use of any chemical, user should always refer to the Safety Data Sheet (SDS) to understand all significant hazard and risk associated to the chemicals.

In general, SDS will provide all the information with regards to hazards of the product, how to use the product safely, what to expect if the recommendations are not followed, how to recognize symptoms of exposure, and what to do if emergencies occur.

6.3.2. Personnel Protective Equipment (PPE)

Personal protective equipment (PPE) is an equipment worn to minimize exposure to hazards that can cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, physical, electrical, mechanical, or other workplace hazards.

It is the responsibility of every laboratory user to wear the appropriate PPE when working in the laboratory. Additional PPE to be worn depends on activities conducted by the specific user. Usually, the type of PPE to be used has been predetermined during risk assessment process.

For instance, when handling corrosive chemical, appropriate nitrile glove and safety goggle should be worn. Other consideration to bear in mind is when handling volatile chemicals which should always be done in provided fume hood.

Some types of used disposable PPE (latex glove, nitrile glove), may be considered as a scheduled waste which should be disposed according to the existing legal, regulations and procedures.

6.4. Incident Investigation

All incidents need to be investigated and reported. According to BS OHSAS 18001:2007, an accident is work related event(s) in which an injury or ill health (regardless of severity) or fatality occurred, or could occur (near miss).

Incident shall be reported using standard provided Incident Notification Form within 24 hours of occurrence.

6.5 Emergency Preparedness and Response

One of critical element in risk assessment is the capability of managing people during all possible emergency situations.

Through laboratory safety briefings, notices, signage and assessments, all approved laboratory users are expected to know all the locations of nearest;

- Assembly Point / Fastest Escape Route
- Fire Extinguisher
- Emergency Shower / Eye Wash
- Chemical Spillage Kit
- First Aid Box and

when facing any emergency situations.

Immediate necessary action taken by first responder may reduce the risk impact associate with the specific emergency occurrence.

In any emergency situation, before aiding others, priority is to ensure own safety before.

Laboratory users shall always keep the emergency contact numbers at all times.

IIUM Kuantan Campus
Emergency Contact Numbers

Department	Contact No.
General Emergency Number	999
IIUM Kuantan Office Of Security Management (OSeM)	09 - 570 5555
IIUM Kuantan Family Health Clinic (FHC)	09 - 570 4444
Police (IPD Kuantan)	09 - 565 2222
Bomba (Indera Mahkota)	09 – 572 9322
General Hospital (HTAA)	09 – 557 2222

7.0 WASTE MANAGEMENT

7.1 Schedule Waste Management

Under Environmental Quality Act 1974 (EQA, 1974) IIUM Kuantan Campus in general subscribes to Environmental Quality (Scheduled Wastes) Regulations, 2005

According to these regulations, "scheduled wastes" means any waste falling within the categories of waste listed in the First Schedule.

Any person who generates scheduled waste is considered as waste generator. Every waste generator in general shall ensure that the scheduled waste generated are properly stored, treated on-site, recovered on-site for material or product from such scheduled wastes or delivered to and received at prescribed premises for treatment, disposal or recovery of material or product from scheduled wastes.

In addition, the waste generator shall ensure that scheduled wastes that subjected to movement or transfer be packaged, labelled and transported in accordance with the guidelines prescribed by the Director General.

7.2 Non Scheduled Waste Management

Non scheduled waste usually refers as general waste that can be recycled. Non scheduled waste should be managed properly to reduce the use of natural resources. Plastic, papers, glass bottle and machinery dismantling are most common waste generated by laboratory. Waste segregation becomes more important to help kulliyyah manage its non scheduled waste efficiently.

7.3 Resources Management

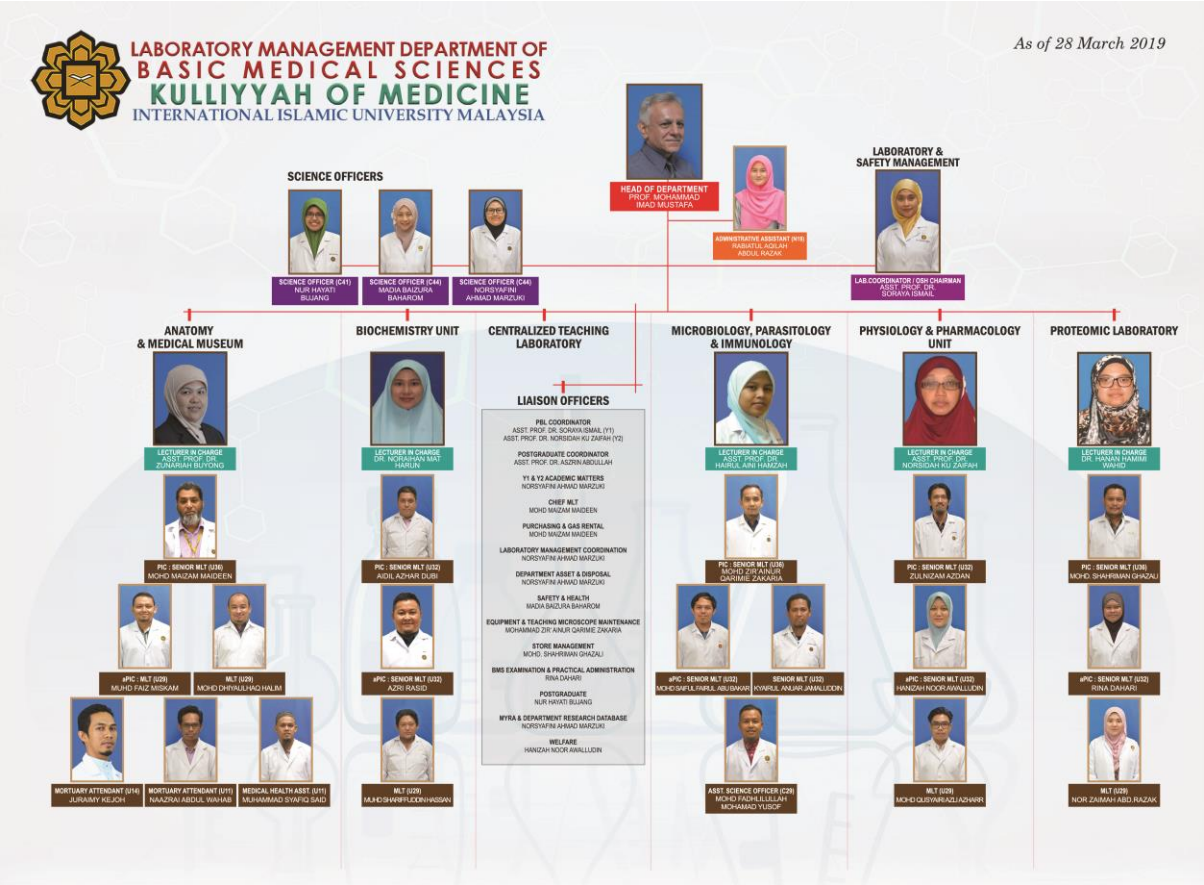
Prior to leaving laboratory, users should ensure every unused electrical instrument/appliance including light and air conditioner system are switched off. Each faucet to be closed properly and any leakages should be promptly reported.

TERMS AND DEFINITIONS

ASO	Assistant Science Officer
BS OHSAS 18001:2007	British Standard Occupational Health and Safety Assessment Series (Occupational Health and Safety Management System)
FYP	Final Year Project
HIRARC	Hazard Identification, Risk Assessment and Risk Control
HTAA	Hospital Tengku Ampuan Afzan
IIUM	International Islamic University Malaysia
IPD	Ibupejabat Polis Daerah
MLT	Medical Laboratory Technologist
OSH	Occupational Safety and Health
PDCA	Plan – Do – Act - Check
FHC	Family Health Clinic IIUM Kuantan
PPE	Personal Protective Equipment
SO	Science Officer
OHSAS	Occupational Health and Safety Assessment Series

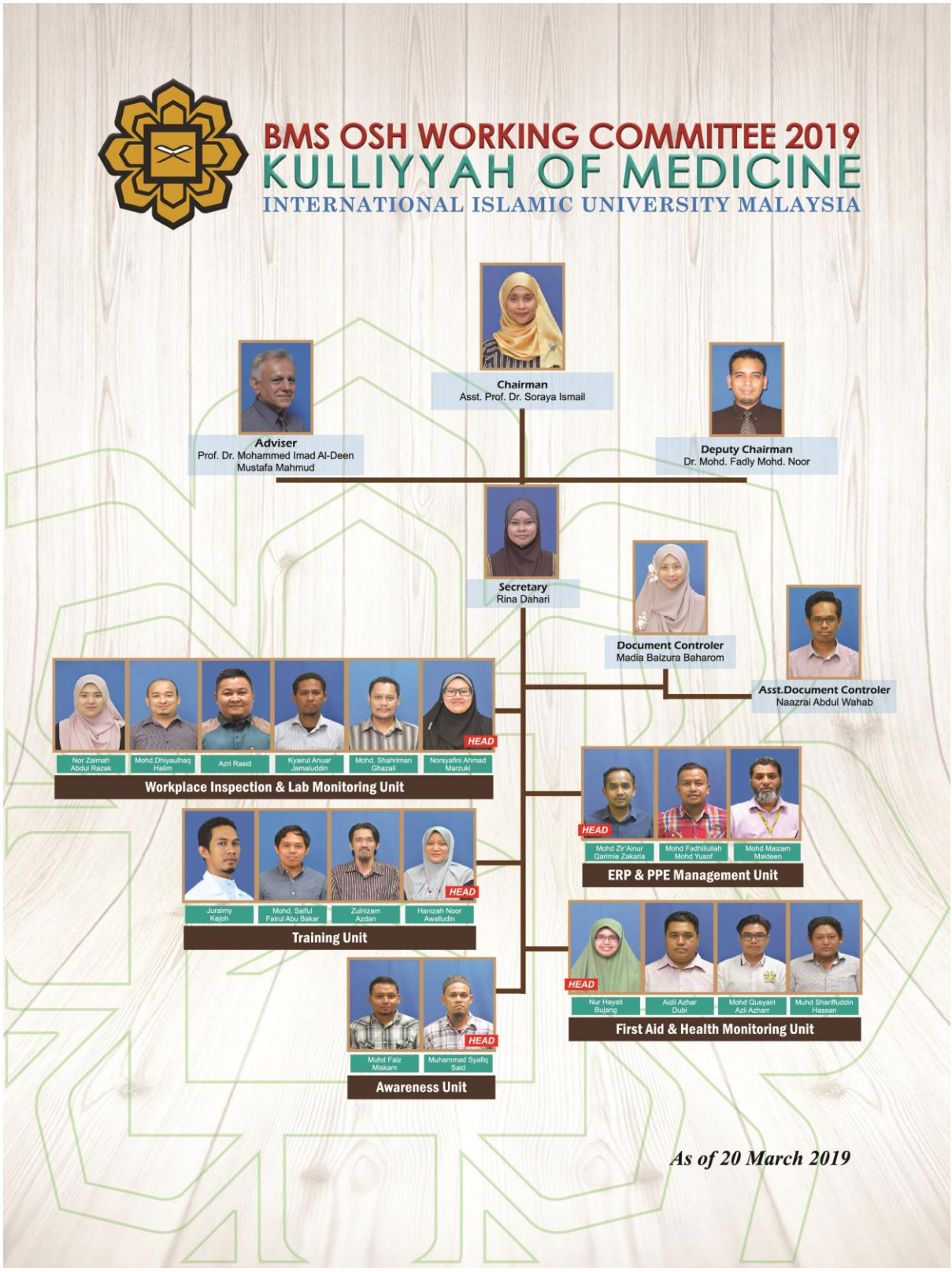
Attachment A

Laboratory Management 2019



Attachment B

BMS OSH Working Committee (BMSWC) 2019



Attachment C

Kulliyyah of Medicine Safety and Health Coomittee (KOMSHC) 2019