

## **Diploma /BSc (Hons) Occupational Health and Safety - LMSC438**

### **1. Introduction**

With the introduction of new technologies, equipment and work patterns, concern for the promotion of health and safety in the workplace is increasing among workers and employees across all industries and in society, in general. Consequently, the need for occupational health and safety professionals is also increasing. In this context, this new modular programme in Occupational Health and Safety, which is a collaborative endeavour with the Faculty of Science offers a progression through Diploma (60 credits) to a BSc (Hons) Degree (105 credits).

The programme is designed to benefit both Occupational and Health Officers who wish to develop and update their skills and those with a general interest in understanding the technical and managerial skills to address the occupational health and safety issues of modern society.

### **2. Objectives**

The primary objective of the programme is to prepare and provide professional training to practicing and potential health and safety officers, so that they can develop their knowledge and skills in:

- i. Identifying, understanding and appreciating occupational hazards (actual and potential) and the taking of appropriate measures for their prevention and control;
- ii. Analysing, investigating, reporting and prevention of accidents and associated problems in the workplace;
- iii. Advising about the requirements in promoting a safe and healthy working environment; and
- iv. Applying the provisions of the occupational safety, health and welfare legislation to ensure their compliance.

### **3. Programme Requirements**

In accordance with the General Entry Requirements for admissions to the University of Mauritius for Diplomas and Undergraduate degree.

#### ***For Diploma/BSc***

2 GCE 'A' Levels, at least one of which being a science subject, i.e. Physics, Chemistry, and /or Biology.

In line with the University policy on access to courses, students without the formal entrance qualifications set out above will be considered on their basis of work experience (three years minimum). Each case will be considered on its own merits.

#### ***For BSc (Upgrade)***

Students should be a holder of a Diploma in Occupational Health and Safety and any other equivalent and suitable qualifications acceptable by the University of Mauritius.

#### 4. Programme Duration

	<b>Normal (Years)</b>	<b>Maximum (Years)</b>
Diploma (Part-Time)	2 Years (4 Semesters)	4 Years (8 Semesters)
BSc (Part-Time)	4 Years (8 Semesters )	6 Years (12 Semesters)
BSc (Part-Time – Upgrading)	2 Years (4 Semesters)	4 Years (8 Semesters)

#### 5. Credits per Year

Minimum 18 Credits (subject to regulation 3)

Maximum 48 Credits

#### 6. Minimum Credits Required for Award of Diploma/Degree

- Diploma: 60
- BSc: 105
- BSc (Upgrade): 45

#### 7. Assessment

Each module will carry 100 marks and will be assessed as follows (unless otherwise specified):

Assessment will be based on a written examination of 2-hour or 3-hour duration as specified and continuous assessment carrying a range of 20% to 30% of total marks. Continuous assessment will be based on at least two (2) assignments and/or laboratory works, **and should include at least 1 compulsory class test**, per module per year.

For a student to pass a module, an overall total of 40% for combined continuous assessment and written examination components would be required without minimum thresholds within the individual continuous assessment and written examination.

Tools and Techniques (OHS 2002) and Professional Practice for Occupational Health (OHS 2201) will be assessed solely on continuous assessment.

The mini project (Diploma -MGT 3001) and final year dissertation (BSc MGT 3000Y) will carry 3 credits for Diploma and 6 credits for the BSc. Yearly modules carry 6 credits and semester modules carry 3 credits.

Semester modules will be assessed at the end of the semester while yearly module will be assessed at the end of the academic year.

8. Programme Plan – Diploma /BSc (Hons) Occupational Health and Safety

<b>Year 1</b>			
<b>Module Code</b>	<b>Modules</b>	<b>Hrs/Wk L+P</b>	<b>Credits</b>
MGT 1067Y(1)	Principles and Practice of Mgt.	3+0	6
OHS 1001Y(1)	Occupational, Environmental Health and Ergonomics	3+0	6
OHS 1003(1)	First Aid*	3+0	3
MGT 2101(1)	Human Resource Mgt. 1*	3+0	3
MGT 1068(1)	Training & Simulation*	3+0	3
OHS 1201(1)	Industrial Hygiene I**	3+0	3
OHS 1002Y(1)	Fire Prevention & Protection	3+0	6
<b>Year 2</b>			
<b>Module Code</b>	<b>Modules</b>	<b>Hrs/Wk L+P</b>	<b>Credits</b>
OHS 2001(3)	Research Methodology**	3+0	3
OHS 2002(3)	Tools and Techniques*	1+4	3
MECH 2101(3)	Safety Engineering I*	3+0	3
ELEC 2214(3)	Safety Engineering II**	3+0	3
LAWS 2233Y(3)	General Principles of Law and Occupational and Safety legislation	3+0	6
OHS 2201(3)	Professional Practice for Occupational Health*	3+0	3
MGT 2001(3)	Mini Project**		3
CIVE 3001Y(5)	Environmental Technology and Management System	3+0	6

**EXIT DIPLOMA**

<b>Year 3</b>			
<b>Module Code</b>	<b>Modules</b>	<b>Hrs/Wk L+P</b>	<b>Credits</b>
MGT 2244(3)	Managing Transition and Change*	3+0	3
MGT 3160(5)	Occupation Management*	3+0	3
MGT 3161(5)	Accident Investigation and Risk Management*	3+0	3
CIVE 3214(5)	Safety Engineering III**	3+0	3
OHS 3201(5)	Health Behavioral Sciences**	3+0	3
OHS 3001Y(5)	Control of communicable and non communicable diseases	3+0	6

<b>Year 4</b>			
<b>Module Code</b>	<b>Modules</b>	<b>Hrs/Wk L+P</b>	<b>Credits</b>
OHS 4001Y(5)	Occupational Safety Practice	3+0	6
MGT 4121(5)	Health Economics*	3+0	3
OHS 4002(5)	Industrial Hygiene II*	3+0	3
OHS 4201(5)	Industrial Toxicology and Chemical Hazards**	3+0	3

LAWS 4205(5)	The Court Process**	3+0	3
MGT 3000Y(5)	Dissertation		6

\*These are 3 credits modules and will be run and examined in the **first** semester

\*\* These are 3 credits modules and will be run and examined in **second** semester

## 9. Outline Syllabus

### **CIVE 3001(3) - ENVIRONMENTAL TECHNOLOGY AND MANAGEMENT SYSTEM**

Environmental Problems in Mauritius - Air Pollution Control - Solid Waste Management - Industrial Wastewater Management - Wastewater Treatment Process - Noise Pollution Control; Global Environment Concern - Environmental Policies - Environmental Aspects and Impacts Evaluation - Environmental Management Framework (ISO 14000, Green Globe, etc) - Environmental Auditing - Integrating EMS with Health, Safety and Quality Systems; Environmental Protection Act.

### **CIVE 3214(5) - SAFETY ENGINEERING III (CIVIL)**

Construction plant and equipment; Construction Hazards and their safety measures; Types of Civil engineering work; Demolition; Excavation; Road works; Paintings etc.; Scaffolding erection; Steel structures. Erection; Ladder, Lifting machines

### **ELEC 2214(3) - SAFETY ENGINEERING II (ELECTRICAL)**

Generating Electricity - Electrical Circuit - Electrical Machines - Electrical Control Equipment - Electrical Hazards and Safety Measures - MSB Code of Practice on Electrical Installation in Buildings MS 63, etc.

### **LAWS 2233Y(3) - GENERAL PRINCIPLES OF LAW AND OCCUPATIONAL HEALTH AND SAFETY LEGISLATION**

Meaning of Law; The Court System, Sources of Law; Statutory interpretation; Case law techniques; Brief introduction to Civil Law and Criminal Law, Duties and care of the employer at common law; Liabilities of the employer at common law; Liabilities under Workmen's Compensation Act; Relevant aspects of social security law; History and background of occupational health and safety legislation; Specific health and safety legislation; Occupational Health and Safety Act; Dangerous Chemical Control Act; The administration of occupational health and safety legislation; Registration of factories and health and safety committees; General duties of the employer and of the employees; Specific provisions relating to health, safety and welfare offences; Chemical Safety Act

### **LAWS 4205(5) - THE COURT PROCESS**

Brief recap of the court system; Civil cases; Different types of civil action; Courts Act, Code de Procedure Civil, Courts (Civil Procedure), Court of Civil Appeal; Rules of the Supreme Court; Writ of Injunction; Judicial Review; Criminal cases; Jurisdiction of Courts; The investigation process; The information; Trials before District and Intermediate Courts, Trials before the Supreme Court; Appeals; Evidence; Burden and standard of proof; Relevance, admissibility and weight of evidence; Witnesses, Competence and compellability; Examination of witnesses; Hearsay; Opinion and expert evidence; Documentary evidence.

### **MECH 2101(3) - SAFETY ENGINEERING I (MECHANICAL)**

Basic Mechanical Engineering Concepts - Safe use of tools - Working Principles and Safety for Pressurized Machines: Compressors, boilers, etc - Recognition, Evaluation and Control of hazards like noise, pressure, vibration, etc.

*Basic Physics:* States of Matter (Melting, boiling temperatures, etc) - Heat and Temperature -Transmission of Heat (conduction, convection, radiation) - Thermal expansion - Expansion of gases - Mechanics (Machines, Moment of a force, Mechanical advantage, etc).

*Machinery Hazards:* Motion as a fundamental hazard (types of motion: Rotary, reciprocating, etc) - Machinery Guarding (General principles, Guards, etc) - Stresses & Strains (Tensile, Compressive, Shear, etc) - Properties of Metals (Safe working load, fatigue, corrosion, wear, etc) - Fluid Mechanics & Light (Pressure flow & drop, Viscosity, etc).

#### **MGT 1067Y(1) - PRINCIPLES AND PRACTICE OF MANAGEMENT**

Part 1: The study of organizations; The environment of Organizations; Evolution of Management theory; Management concepts; Functional Areas of Management: Production, Finance, HR and Marketing, The Managerial functions of Planning, Leading, Organizing, Controlling; Managerial Skills.

Part 2: Managing individuals in organizations: Managing differences; Motivation, Managing Groups and Teams: Group behavior; Conflict and co-operation; Power and Politics; Leadership; Social Responsibility.

Part 3: Managing Structure and processes: Organizational structure; Job design; Restructuring, Communications, Careers, Change; Diversity; Knowledge Management.

Part 4: Evolution of Marketing, Marketing Mix, 4 Ps of Marketing.

#### **MGT 1068(1) - TRAINING AND SIMULATION**

Introduction to training; System Approaches to training; Learning and Skills; Training needs analysis; Simulation in the work context; Transfer of training; Theoretical approaches; Evaluation of training intervention; The future of training and simulation at work

#### **MGT 2101(1) - HUMAN RESOURCES MANAGEMENT 1**

History Evolution and Developments – Background and Role. Strategy and Culture in HRM – Environmental Approach. Job Analysis and Human Resource Planning. Recruitment and Selection. Performance and Reward Management. Training and Development. Case Study.

#### **MGT 2244(3) - MANAGING TRANSITION AND CHANGE**

Forcers calling for organizational change; Planned change; Leading and managing change; Resistance to change; The process of organizational development; Human process intervention; Restructuring employee involvement; Work design; HR interventions; Organizational Transformation; Building a learning organization through change interventions.

#### **MGT 3000Y(5) - DISSERTATION**

The research dissertation is seen as the critical indicator of attainment of the BSc (Hons) degree as distinct from the Diploma.

Students will be expected to conduct either a laboratory work or field study or survey type questionnaire based research involving data collection analysis and interpretation.

#### **MGT 3001(3) - MINI PROJECT**

This will be a bibliographic based project equivalent to one module and spanning over one semester. Students will be expected to select a specific topic for the project which is aimed at developing the students' understanding of the principles of research and further developing analytical and critical writing skills. Students will be required to submit a project report in the form of 5000- 7500 words as per the prescribed format.

#### **MGT 3160(5) - OCCUPATIONAL MANAGEMENT**

Management requirements of contemporary occupational practice; Introduction to management and organizational theory; Evaluation, audit, and quality assurance; Benchmarking; Strategy and policy development. Human resource implications; Efficient and effective practice Communication and man-management skills; Leadership skills; Gaining commitment

#### **MGT 3161(5) - ACCIDENT INVESTIGATION AND RISK MANAGEMENT**

Accident investigation approaches; Investigation as it relates to safety management systems; Notification and reporting procedures; Roles and responsibilities; On site appraisal and preservation of evidence; Media handling; Working with interested parties; Operations / Systems / Engineering investigations; Human factors,

errors, illusions, the SHEL concept; Pathology, witnesses, and interviewing; Sabotage / criminal acts; Analytical methods; Risk Evaluation - Accident Investigation, Product Liability, Human Factors - Risk Analysis - Risk Management Information System - Risk and Probabilities - Risk Control Strategies - Management of Industrial Accident Prevention and Preparedness; Legal requirements, Principles of means of escape – Evacuation procedures

#### **MGT 4121(5) - HEALTH ECONOMICS**

Scarcity of resources; Demographic trends; Demand and supply of health care; Market failures in health care and occupational safety; Government and occupational health and safety; Private solution to occupational health and safety; Equity and efficiency; Laissez faire;

#### **OHS 1001Y(1) - OCCUPATIONAL, ENVIRONMENTAL HEALTH AND ERGONOMICS**

Unit 1 - This unit provides an introduction to occupational and environmental epidemiology principles with particular emphasis on methods of investigation. It also provides knowledge of related industrial diseases and introduces students to a range of key methodological tools for assessing and controlling environmental risks to health.

Unit 2 – This unit concentrates on the applied aspects of ergonomics to help students to develop an understanding of how ergonomics principles can create healthier, safer and more efficient systems in a working environment.

#### **OHS 1002Y(1) - FIRE PREVENTION AND PROTECTION**

Fire behavior of structural materials - Elements of structure.

Fire protection equipment: Type, suitability, siting, operation, inspection and maintenance of first aid fire fighting equipment (Portable fire extinguishers, hose reels) and of fixed installations (sprinklers, drenchers, foam, dry powder and gas. Fire detectors and alarm system.

Fire prevention Principles: Procedures for fire risk assessment, analysis and control. Housekeeping – storage principles precautionary measures.

#### **OHS 1003(1) - FIRST AID**

Unit 1: Introduction to human anatomy and physiology.

Unit 2: First Aid Equipment and Facilities: First Aid Kit and First Aid Box - Stretcher and Blanket. Observation of Procedures in Giving First Aid: Basic Principles of First Aid - Shock Prevention, Burns, unconsciousness- Causes, Stages and Treatment; fractures; Epilepsy, amongst others.

#### **OHS 1201(1) - INDUSTRIAL HYGIENE I**

Introduction to industrial Hygiene; Occupational Health Standards; Toxic substances; Confined spaces; Radiation; Hazards, Noise and Vibration Hazards; Airborne Hazards; Light; Sampling for airborne contaminants.

#### **OHS 2001(3) - RESEARCH METHODOLOGY**

This module will equip students with the underpinning skills necessary for them to undertake a project dissertation. It also provides students with the understanding of processes and statistical tools to plan, implement and evaluate a research based study. Sessions looking for computing skills, questionnaire design, amongst others will be covered. Students will be expected to formulate their project ideas at the end of the module.

#### **OHS 2002(3) - TOOLS AND TECHNIQUES**

This practically based module aims at providing hands on experience on laboratory techniques and analytical tools related to industrial toxicology and chemical hazards.

**OHS 2201(3) - PROFESSIONAL PRACTICE FOR OCCUPATIONAL HEALTH**

This module requires students to draw on their practice assessment, profiles and experiences in placements as well as their previous knowledge and skills. Students are expected to be highly participative. Problem solving and discussion will be central to this approach. Students will have to submit a report.

Guest lectures in specialized expertise will also be organized for some sessions.

**OHS 3001Y(5) - CONTROL OF COMMUNICABLE AND NON COMMUNICABLE DISEASES**

This unit will introduce students to the way pathogens invade, establish, evade the immune response and cause disease. A range of approaches to disease control and the concept of control strategies will be discussed. The opportunity to study in detail some specific occupational and non communicable diseases will be afforded.

**OHS 3201(5) - HEALTH BEHAVIORAL SCIENCE**

This module considers the psycho-social factors and their controls, including stress, drug, alcohol misuse and violence at work. Other factors such as theoretical, developmental, socio-cultural, and demographic to maximize health at the workplace will also be considered.

**OHS 4001Y(5) - OCCUPATIONAL SAFETY PRACTICE**

This module provides the knowledge to identify workplace hazards associated with acute trauma, chemicals, electricity, construction, etc) and traces the identification and causes of hazards in the workplace along with the necessary skills to make effective decisions on appropriate means of control. Consideration will be given to global and local issues and examples will be drawn from developing and developed countries.

**OHS 4002(5) - INDUSTRIAL HYGIENE II**

Biological Hazards; Indoor and air quality; Controlling airborne hazards; Occupational Noise exposure; ionizing and non ionizing radiation' Thermal Stress; Selection and use of personal protective equipment; Toxic substances and confined spaces; Radiation

**OHS 4201(5) - INDUSTRIAL TOXICOLOGY AND CHEMICAL HAZARDS**

This unit provides an introduction to the basic concepts of industrial toxicology as applied to areas of the work place and industrial pollution. Considerations will be given to concepts of hazards and risk as applied to toxic substances.