

# MEDICAL LABORATORY SCIENCE

## Admission to Program

Admission to the program is explained in the HCT Admission Policy described in the Academic Policies section of this Catalog.

## Program Mission

The Bachelor of Medical Laboratory Science at the Higher Colleges of Technology aims to produce skilled Emirati professionals in medical laboratory sciences who are work ready as medical laboratory science professionals delivering diagnostic care to a wide variety of patients/clients.

## Program Description

The Bachelor of Medical Laboratory Science is a four-year professional program. Graduates are trained biomedical scientists who possess a broad range of knowledge in medical laboratory diagnostics with the ability to work proficiently and are culturally competent to deliver care to a wide range of clients/patients. The four years of undergraduate study integrates biomedical science theory, laboratory skills and supervised professional practice in a variety of clinical settings. Medical laboratory scientists are specialized in the area of clinical diagnostics, producing accurate results required by physicians and health care team members for treatment and management of patients and clients. Graduates possess professional knowledge in the areas of haematology, immunology, transfusion science, clinical chemistry, microbiology, molecular and cellular pathology, with the potential to specialize and advance their skills in specialist areas. These skills can be easily transferred to work competently in public health labs, municipality and forensic labs and in the biotechnology industry. Graduates who are successful in their program can take the credentialing exam for the American Society of Clinical Pathologists International (M.T ASCPI), which provides access to society activities and program recognition for those students who wish to advance their education into graduate studies.

Students will have the option to graduate with a Diploma in Medical Laboratory Technology (Laboratory Technician) upon the successful completion of all required courses and preceptorships after 2 years of study

### Program Learning Outcomes

#### Bachelor of Medical Laboratory Science (Medical Laboratory Scientist) (NQF Level 7)

*On successful completion of this program the graduate will be able to:*

1. Interpret and apply knowledge, management and decision making aspects to provide quality medical laboratory diagnostic services in variety of healthcare settings.
2. Demonstrate knowledge of healthcare regulations and integrate deep knowledge of relevant technological advances and evidence-based practice to address challenges in the field of laboratory medicine.
3. Demonstrate effective cognitive and technical skills to analyze clinical specimens, formulate solutions and identify risks in order to deliver laboratory decisions to support and enhance clinical care.

4. Demonstrate skills in using equipment and advanced technologies, information systems, and communication devices that support safe medical laboratory practice in a variety of healthcare settings
5. Apply clinical research skills to investigate problems in the medical laboratory discipline and to assess and evaluate quality procedures as relevant.
6. Demonstrate professional and technical leadership attribute and be able to lead and work collaboratively within a multidisciplinary team in a diverse range of clinical laboratories to ensure safe medical laboratory practice.
7. Demonstrate the ability to apply entrepreneurship and innovation skills to incorporate new solutions into medical laboratory practice.
8. Demonstrate professional attributes relevant to their role as medical laboratory technologists in the clinical laboratories.

#### Diploma in Medical Laboratory Technology (Laboratory Technician) (NQF Level 5)

*On successful completion of this program the graduate will be able to:*

1. Apply knowledge and decision making aspects to provide quality medical laboratory diagnostic services in a variety of healthcare settings.
2. Demonstrate knowledge of medical laboratory information assembly and retrieval, professional practice guidelines and underlying technological principles and concepts.
3. Demonstrate effective cognitive and technical skills to analyze clinical specimens and formulate solutions in order to deliver laboratory results to support and enhance clinical care.
4. Demonstrate skills in using equipment and technologies, information systems, and communication devices that support safe medical laboratory practice in a variety of healthcare settings.
5. Demonstrate the ability to work independently as a medical laboratory technician as well as part of a team in a range of clinical laboratories to ensure safe medical laboratory practice.
6. Demonstrate professional and technical leadership attribute and be able to lead and work collaboratively within a multidisciplinary team in a diverse range of clinical laboratories to ensure safe medical laboratory practice.
7. Demonstrate the ability to apply entrepreneurship and innovation skills to incorporate new solutions into medical laboratory practice.
8. Demonstrate professional attributes relevant to their role as medical laboratory technologists in the clinical laboratories.

## Requirements Completion Requirements

Bachelor of Medical Laboratory Science

**Students must successfully complete a minimum of 126 credits as follows:**

Code	Title	Credit Hours
	Health Science Core Courses	24
	Medical Laboratory Science Core Courses	54
	Medical Laboratory Science Preceptorship Courses	15

General Studies	33
<b>Total Credit Hours</b>	<b>126</b>

Diploma in Medical Laboratory Technology

**Students must successfully complete a minimum of 66 credits as follows:**

Code	Title	Credit Hours
Health Science Core Courses		
		15
Medical Laboratory Science Core Courses		
		24
Medical Laboratory Science Preceptorship Courses		
		3
General Studies		
		24
<b>Total Credit Hours</b>		<b>66</b>

Code	Title	Credit Hours
<b>Health Science Core Courses</b>		
Required Credits: 24		
HSC 1023	Chemistry for Health Sciences	3
HSC 1033	Anatomy and Physiology	3
HSC 1113	Introduction to Healthcare Systems and Professional Practice	3
HSC 1123	Work Health and Safety	3
HSC 1803	Medical Terminology for Health Sciences	3
HSC 4003	Research Methods for Health Sciences	3
HSC 4006	Capstone Research Project for Health Sciences	6

#### Medical Laboratory Science Core Courses

Required Credits: 54		
HML 2013	Clinical Hematology I	3
HML 2033	Medical Microbiology	3
HML 2043	Clinical Chemistry I	3
HML 2053	Immunology	3
HML 2113	Systematic Bacteriology	3
HML 2143	Clinical Hematology II	3
HML 2153	Histotechnology	3
HML 2203	Clinical Chemistry II	3
HML 3003	Hemostasis	3
HML 3013	Parasitology, Virology, Mycology	3
HML 3023	Cytotechnology	3
HML 3033	Clinical Biochemistry	3
HML 3043	Transfusion Medicine	3
HML 3053	Laboratory Management	3
HML 3103	Applications in Molecular Diagnostics	3
HML 4016	Clinical Correlations	6
HML 4123	Pathology of Diseases	3

#### Medical Laboratory Science Preceptorship Courses

Required Credits: 15		
HML 2213	Clinical Preceptorship I	3
HML 4006	Clinical Preceptorship II	6
HML 4116	Clinical Preceptorship III	6

#### General Studies

Required Credits: 33

#### English, Arabic or other Languages

Required Credits: 12

#### Humanities or Art

Required Credits: 3

#### Information Technology or Mathematics

Required Credits: 6

#### The Natural Sciences

Required Credits: 3

#### The Social or Behavioral Sciences

Required Credits: 9

Description	Data
Total Required Credits	126
Maximum Duration of Study	6 years
Minimum Duration of Study	4 years
Cost Recovery Program	No
Program Code	BHMLU
Major Code	HML

## Ideal Study Plan Recommended Sequence of Study

### Year 1

Semester 1	Credit Hours
AES 1003 Emirati Studies	3
HSC 1013 Human Biology	3
HSC 1113 Introduction to Healthcare Systems and Professional Practice	3
HSC 1803 Medical Terminology for Health Sciences	3
LSS 1003 Life and Future Skills	3
<b>Credit Hours</b>	<b>15</b>

### Semester 2

HSC 1023 Chemistry for Health Sciences	3
HSC 1033 Anatomy and Physiology	3
HSC 1123 Work Health and Safety	3
LSC 1103 Professional Communication and Reporting	3
LSS 1123 Basic Research Methods	3
<b>Credit Hours</b>	<b>15</b>

### Year 2

#### Semester 3

HML 2013 Clinical Hematology I	3
HML 2033 Medical Microbiology	3
HML 2043 Clinical Chemistry I	3
HML 2053 Immunology	3
AES 1013 Arabic Communications I	3
<b>Credit Hours</b>	<b>15</b>

#### Semester 4

AES 1033 Islamic Culture	3
HML 2113 Systematic Bacteriology	3
HML 2143 Clinical Hematology II	3
HML 2153 Histotechnology	3
HML 2203 Clinical Chemistry II	3
ICT 2013 Computational Thinking and Coding	3
<b>Credit Hours</b>	<b>18</b>

### Summer

HML 2213 Clinical Preceptorship I	3
Diploma in Medical Laboratory Technology exit	
<b>Credit Hours</b>	<b>3</b>

Year 3		
<b>Semester 5</b>		
HML 3003	Hemostasis	3
HML 3013	Parasitology, Virology, Mycology	3
HML 3023	Cytotechnology	3
HML 3033	Clinical Biochemistry	3
LSM 1113	Statistical Mathematics	3
	Credit Hours	15
<b>Semester 6</b>		
BUS 2403	Innovation and Entrepreneurship	3
HML 3043	Transfusion Medicine	3
HML 3053	Laboratory Management	3
HML 3103	Applications in Molecular Diagnostics	3
LSC 2223	Future Skills Capstone	3
	Credit Hours	15
Year 4		
<b>Semester 7</b>		
HML 4006	Clinical Preceptorship II	6
HML 4016	Clinical Correlations	6
HSC 4003	Research Methods for Health Sciences	3
	Credit Hours	15
<b>Semester 8</b>		
HML 4116	Clinical Preceptorship III	6
HML 4123	Pathology of Diseases	3
HSC 4006	Capstone Research Project for Health Sciences	6
	Credit Hours	15
	Total Credit Hours	126

## Faculty and Academic Staff

**Ahmed Sharafeldin**, Assistant Professor, PhD, Experimental Medicine, Karolinska Institute, Sweden, 2001

**Ban Altoumah**, Lecturer, Master, Clinical Biochemistry, University of Technology Sydney, Australia, 1998

**John Vandergraaf**, Assistant Professor, PhD Food Biochemistry, University of Reading, United Kingdom, 2000

**Lama Abdul-Mahdi Musallam**, Lecturer, Masters M.Sc of Hematology and Blood banking (Medical Laboratory Sciences), Jordan University of Science and Technology JUST, Jordan, 2010

**Lai Kok Song**, Assistant Professor, PhD, Biological Sciences, Nara Institute of Science and Technology, Japan, 2012

**Lim Erin**, Assistant Professor, PhD Medical Biotechnology, Universiti Putra Malaysia, Malaysia, 2010

**Ronnie Dumale**, Lecturer, Master of Arts in Education major in Educational Management; University of Baguio, Philippines (2006), Master of Arts in Biology, Saint Mary's University, Philippines (2008)

**Tanveer Ahmad**, Lecturer, PhD in Biochemistry and Molecular Biology, Monash University, Australia, 2019

**Zakeya Ahmad Baalawy**, Assistant Professor, PhD, Pharmaceutical Sciences Research (Biochemistry), King's College, United Kingdom, 2012