

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Al-Mustaqbal University

Faculty/Institute: College of Health and Medical Techniques.

Scientific Department: Medical Laboratories Techniques.

Academic or Professional Program Name: Medical Laboratories Techniques.

Final Certificate Name: Bachelor in Medical Laboratories Techniques.

Academic System: Courses

Description Preparation Date: 9/2025

File Completion Date: 9/2025



Signature: 

Head of Department Name:

Prof. Dr Dakhil Naser Taha

Date: 9/2025

Signature:

Scientific Associate Name:

Prof. Dr Ahmed Aduan Al-Khafaji

Date: 9/2025

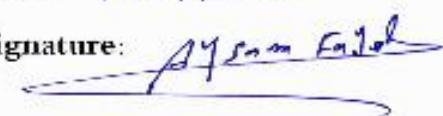
The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: ١٠/٩/٢٠٢٥

Signature:



Approval of the Dean

Assistant Prof: Zahraa haleem AL-Qaim



1. Program Vision

To make the Medical Laboratory Sciences Program a role model and a pioneer, both locally and internationally, in preparing scientific competencies and contributing effectively to the development of the field of medical laboratories.

2. Program Mission

The Department of Medical Laboratory Technology is committed to providing high-quality academic and applied education that contributes to preparing distinguished graduates who are able to compete and meet the demands of the labor market. It also conducts scientific research in the fields of laboratories and medical services through skill development, interest in external scientific publication in specialized scientific journals, and active community participation in cooperation with universities, institutes, and research centers at home and abroad to achieve sustainable development goals.

3. Program Objectives

1. Providing distinguished scientific and applied education in medical laboratories that combines modern clinical foundations with applications.
2. Preparing specialized medical technical personnel in the field of medical laboratories and pathological analysis. They possess professional competence in handling laboratory-based analytical tests, enabling graduates to work in public and private healthcare institutions.
3. Preparing a supportive medical cadre to deal with all epidemics and emerging diseases at any time.
4. Instilling ethical and professional values in medical laboratory practices, ensuring adherence to quality and occupational safety standards.
5. Empowering graduates to interact positively with the community and participate in health awareness.
6. Supporting the continuous professional development of faculty members and students through training programs and partnerships to complement pathological diagnosis through integration with other health branches and

departments.

7. Conducting effective scientific research by utilizing the department's laboratories to assist professors and specialists in conducting scientific research to serve the community and achieve sustainable development goals.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

No

5. Other External Influences

Is there a sponsor for the program?

No

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	2	3	4.3%	
College Requirements	3	7	%10.1	
Department Requirements	28	59	%85.6	
Summer Training	2	pass		
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
The first stage - the first course.	MU0511101	General chemistry 1	2	4
	MU0511105	Medical terminology	1	-
	MU0511102	Human biology 1	2	4
	MU0511103	Laboratory instruments 1	1	2
	MU0511106	Medical ethics	2	-
	MU0511107	Computer Applications 1	1	2
	MU0511108	Human rights	2	-
	MU0511104	English language	2	-
	MU0511201	General chemistry 2	2	4

The first stage - the second course	MU0511203	Anatomy	2	4
	MU0511202	Human biology 2	2	4
	MU0511204	Laboratory instruments 2	1	2
	MU0511205	Computer Applications 2	1	2
	MU0511206	Arabic language	2	-
The second stage - the first course	MU0512101	Medical Bacteriology1	2	4
	MU0512102	Biochemistry1	2	4
	MU0512103	Human physiology1	2	2
	MU0512104	Histology1	2	2
	MU0512105	Molecular Biology1	2	4
	MU0512106	Medical Parasitology1	2	4
	MU0512107	Crimes of the defunct Baath regime	1	--
The second stage - the second course	MU0512201	Medical Bacteriology2	2	4
	MU0512202	Biochemistry2	2	4
	MU0512203	Human physiology2	2	2
	MU0512204	Histology2	2	2
	MU0512205	Medical Parasitology 2 & Entomology	2	4
	MU0512206	Descriptive Biostatics	1	2
The third stage - the first course	MU0513101	Histopathology	2	2
	MU0513102	Hematology	2	2
	MU0513103	Medical Mycology	2	4
	MU0513104	Metabolic Disorders	2	4
	MU0513105	Medical Genetics	2	4
	MU0513106	Immunology	2	4
	MU0513107	Advanced Laboratory Techniques	2	2
	MU0513108	Computer Applications	1	2
The third stage - the second course	MU0513201	Histopathology	2	2
	MU0513202	Hematology 2	2	2
	MU0513203	Medical Virology	2	4
	MU0513204	Endocrinology (Clinical)	2	4
	MU0513205	Medical Genetics 2	2	4
	MU0513206	Immunology 2	2	4
	MU0513207	Analytical Biostatistics	1	2

	MU0513208	Computer Applications 2	1	2
The fourth stage - Annual	MU0514001	Clinical Immunology	2	4
	MU0514002	Diagnostic Bacteriology	2	4
	MU0514003	Clinical Chemistry	2	4
	MU0514004	Medical Parasitology	2	4
	MU0514005	Blood Transfusion	2	4
	MU0514006	Histopathology	2	4
	MU0514007	Laboratory Management + Research Methods Teaching	2	--
	MU0514008	Graduation Project	--	5

* Notes may include whether the course is core or optional.

8. Expected learning outcomes of the program

A-Knowledge Outcomes.	<p>A1 - Understands the theoretical foundations of microbiology, clinical chemistry, hematology, immunology, and parasitology.</p> <p>A2 - Distinguishes between different laboratory testing techniques and their diagnostic objectives.</p> <p>A3 - Describes the steps and procedures for collecting and analyzing biological samples with scientific precision.</p> <p>A4 - Explains the relationship between laboratory test results and clinical conditions.</p> <p>A5 - Defines quality standards and performance control in medical laboratories.</p> <p>A6 - Identify the functions of normal human body organs and their relationship to laboratory tests.</p> <p>A7 - Learns how to operate advanced laboratory equipment.</p>
B- Skill Outcomes.	<p>B1 - Accurately performs blood and various body fluid analyses.</p> <p>B2 - Skillfully uses laboratory analysis equipment.</p> <p>B3 - Prepares slides and laboratory tests, and handles microscopes.</p> <p>B4 - Calibrates laboratory solutions and chemical analysis methods.</p> <p>B5 - Handles biological samples safely.</p> <p>B6 - Documents laboratory results and prepares reports.</p> <p>B7 - Implements safety and security instructions, infection control, and patient care procedures.</p>

C-Valuable Outcomes.	<p>C1- Commits to professional ethics, including confidentiality, accuracy, and respect for patient privacy.</p> <p>C2- Demonstrates professional responsibility and adheres to health regulations and instructions.</p> <p>C3- Demonstrates respect for cultural, religious, and social diversity in the work environment.</p> <p>C4- Interacts positively within the medical team and demonstrates a spirit of cooperation.</p> <p>C5- Commits to continuous learning and self-development to keep pace with advances in medical laboratory technology.</p> <p>C6- Observes professional conscientiousness when interpreting results.</p> <p>C7- Commits to training new hires in their field.</p>
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9-Teaching and Learning Strategies:

Lectures and practical lessons - outcome-based learning - learning project-based learning - group work-based learning - problem-based learning - community-based learning - self-learning.

10-Evaluation methods:

Implemented in all stages of the program in general.

Theoretical and practical (clinical) exams, rapid exams, and classroom activities.

	Academic rank	Specialization		Faculty Members	
		General	Special	Staff	lecturer
1.	Prof. Dr. Dakhel Nasser Taha	Chemistry	Analytical	Staff	
2.	Prof. Dr. Ali Hussein Daman	Biology	Microbiology	Staff	

3.	Prof. Dr Habib Saeb Nahar	Biology	Pathogenic Bacteria	Staff	
4.	Prof. Dr. Hadi Yasser Abboud	Chemistry	Minerals Chemistry	Staff	
5.	Prof. Dr. Aysam Mahmoud Ali Fayed	Molecular Genetics and Biotechnology	Molecular Genetics and Biotechnology	Staff	
6.	Prof. Dr. Mahdi Abdul Kadhim	Chemistry	Soil Chemistry		Lecturer
7.	Prof. Dr. Ahmed Khader Obeis,	Biology	Parasitology		Lecturer
8.	Prof. Dr. Raad Ajam Sayel,	Biology	Parasitology		Lecturer
9.	Prof. Dr. Fadhel Jawad Al-Tuma	Biochemistry	Clinical Biochemistry	Staff	
10.	Prof. Dr. Iman Mohammed Jarallah	Biology	Microbiology		Lecturer
11.	Asst. Prof. Dr. Abdul Ali Obaid Abis	Biology	Parasitology	Staff	
12.	Asst. Prof. Dr. Sadiq Jaafar Baqir Jawad	Chemistry	Organic Chemistry	Staff	
13.	Asst. Prof. Dr. Marwa Abdel Karim Saleh	Biology	Pathogenic Bacteria	Staff	
14.	Asst. Prof. Dr. Amir Mazhar Hadi	Biology	Viruses and Vaccines	Staff	
15.	Asst. Prof. Dr. Fouad Ghazi Hassan	Veterinary Medicine	Immunity		Lecturer
16.	Asst. Prof. Dr. Fatima Hashim Abbas	Biology	Parasitology		Lecturer
17.	Asst. Prof. Dr. Ali Mohammed Abdel	Chemistry	Clinical Chemistry		Lecturer
18.	Lecturer. Zulfiqar Ahmed Hamza	Chemistry	Biochemistry	Staff	
19.	Lecturer. Raghda Hamid Jassim	Hemato-pathology	Hemato-pathology	Staff	
20.	Lecturer. Rasha Hussein Awda	Histopathology	Histopathology	Staff	
21.	Dr. Saja Latif Al-Khafaji	Hemato-pathology	Hemato-pathology	Staff	
22.	Dr. Shaima Adel	General Medicine and	Family Medicine		

	Khader	Surgery		Staff	
23.	Lecturer. Dalia Shaker Obaida	Chemistry	Clinical Chemistry	Staff	
24.	Lecturer. Zaid Abdul Hadi Abdul Kadhim	Biology	Microbiology	Staff	
25.	Lecturer. Haider Hamza Abed	Chemistry	Medical Chemistry	Staff	
26.	Dr. Thabat Rais Ashkah	Hemato-pathology	Hemato-pathology	Staff	
27.	Lecturer. Nouris Nouri Mohammed Hussein	Biology	Physiology of endocrine glands	Staff	
28.	Lecturer. Warood Ali Hazal	Biology	Immunological Inheritance	Staff	
29.	Lecturer. Haider Abbas Hadi	Biology	Microbiology	Staff	
30.	Lecturer. Ali Turki Hassan Yasi	Biology	Molecular Genetics	Staff	
31.	Lecturer. Mohammed Haider Hamad	Veterinary Medicine	Histopathology		Lecturer
32.	Lecturer. Falah Abbas Mohammed Saleh	Chemistry	Clinical Biochemistry	Staff	
33.	Lecturer. Haider Halim Saeed	Biology	Microbiology	Staff	
34.	Lecturer. Hazem Yahya Saeed	Chemistry	Biochemistry	Staff	
35.	Lecturer. Mustafa Jawad Abdul	Biology	Microbiology		Lecturer
36.	Lecturer. Zainab Wadah	Biology	Histopathology		Lecturer
37.	Lecturer. Nazima Baha Hussein	Medicine	Histopathology		Lecturer
38.	Lecturer. Ahlam Musa Jaafar	Biology	Microbiology		Lecturer
39.	Lecturer. Faliha Habib Hussein	Biology	Parasitology		Lecturer
40.	Lecturer. Israa Habib Nasser	Biology	Microbiology		Lecturer
41.	Lecturer. Nada Hassan Hussein	Chemistry	Biochemistry		Lecturer

42.	Lecturer. Wafaa Hafzy Ajam	Chemistry	Biochemistry		Lecturer
43.	Lecturer. Saif Anwar Jafar	Veterinary Medicine	Parasitology		Lecturer
44.	Dr. Hoda Abdel Ali	Medicine	Physiology		Lecturer
45.	M.Sc. Haider Mohammed Nasser	Computer Science	Artificial Intelligence	Staff	
46.	M.Sc. Basma Abdulkhalil Eidan	Biology	Microbiology	Staff	
47.	M.Sc. Nour El-Din Azim Fakher	Veterinary Medicine	Parasitology	Staff	
48.	M.Sc. Karam Kazem Abdul Zaid	Chemistry	Physical Chemistry	Staff	
49.	M.Sc. Rafal Qusay Fadhel	English Language	English Language	Staff	
50.	M.Sc. Ayad Jawad Kazem	Biology	Microbiology	Staff	
51.	M.Sc. Zaid Kazem Jassim	Biology	Microbiology	Staff	
52.	M.Sc. Muhammad Jawad Kazim	Biology	Microbiology	Staff	
53.	M.Sc. Abrar Riaz Karim	Computer Engineering	Artificial intelligence	Staff	
54.	M.Sc. Rasul Mushtaq Talib	Biology	Physiology	Staff	
55.	M.Sc. Karrar Ali Hussein	Chemistry	Organic Chemistry	Staff	
56.	M.Sc. Israa Ali Hassan Jawad	Biology	Physiology	Staff	
57.	M.Sc. Ruqayyah Karim Abbas Awda	Biology	Microbiology	Staff	
58.	M.Sc. Sajjad Razaq Jabbar Ibrahim	Biology	Microbiology	Staff	
59.	M.Sc. Zahraa Ahmed Taha Ahmed	Biology	Microbiology	Staff	
60.	M.Sc. Abdul Hassan Saud Jabbar	Biology	Microbiology	Staff	
61.	M.Sc. Zulfiqar Abbas Aswad	Biology	Microbiology	Staff	

62.	M.Sc. Ghaniya Haider Obaid Noshi	Biology	Pathology	Staff	
63.	M.Sc. Rana Adnan Mohammed Mazal	Biology	Microbiology	Staff	
64.	M.Sc. Rawaa Jasb Mazhar Abdul	Chemistry	Biochemistry	Staff	
65.	M.Sc. Dina Mohammed Mobader	Biology	Microbiology	Staff	
66.	M.Sc. Banin Ali Kazim	Information Technology	Information Technology	Staff	
67.	M.Sc. Israa Ghanem Hadi Rawdan	Biology	Microbiology	Staff	
68.	M.Sc. Sara Hashem Dakhel	Biology	Microbiology	Staff	
69.	M.Sc. Ali Khader RASN	Biology	Microbiology		Lecturer
70.	M.Sc. Golan Jabbar	Biology	Histopathology		Lecturer
71.	Zahraa Abis Ali	Biology	-----	Staff	
72.	Iman Hamid Shamkhi	Chemistry	-----	Staff	
73.	Mays Al-Raym Ayad Shaker	Biology	-----	Staff	
74.	Hajar Ali Anaad	Biology	.....	Staff	
75.	Rafeef Safaa Hadi	Biology	.....	Staff	
76.	Zainab Sami Abbas	Biology	.....	Staff	
77.	Ayat Hilmi Kazem	Biology	.....	Staff	
78.	Ilaf Adnan Taha	Biology	.....	Staff	
79.	Nada Saadi Abdel Hassan	Biology	.....	Staff	
80.	Athraa Jabbar Khadir	Biology	.....	Staff	
81.	Sakina Abdul Hussein	Biology	.....	Staff	
82.	Nour Al-Huda Karim Hamad	Biology	.....	Staff	
83.	Zainab Mahdi Saleh	Biology	.....	Staff	
84.	Saja Jawad Obaid	Biology	.....	Staff	
85.	Abdullah Khaled	Biology	.....	Staff	

	Hamza				
86.	Zainab Mahmoud Hatem	Biology	.....	Staff	
87.	Rose Saleh Jawad	Biology	.....	Staff	
88.	Duaa Fadel Kazim Muhammad	Biology	.....	Staff	
89.	Banin Razaq Jihad Nasser	Biology	.....	Staff	
90.	Maryam Najah Hadi	Biology	.....	Staff	
91.	Raghad Wazir Hammadi	Computer Science	.....	Staff	
92.	Ali Adnan Hamza	Medical Laboratories	-----	Staff	
93.	Shahed Fadel Mohsen	Medical Laboratories	-----	Staff	
94.	Amir Irfan Taher	Medical Laboratories	-----	Staff	
95.	Zainab Qasim Mahdi	Information Technology	-----	Staff	
96.	Zahraa Hadi Aziz	Biology	-----	Staff	
97.	Rehab Majed Musa	Biology	-----	Staff	
98.	Saja Fadel Abbas	Biology	-----	Staff	
99.	Zahraa Majed Nassif	Biology	-----	Staff	
0.	Duaa Sami Saktri	Biology	-----	Staff	
1.	Rania Haidar Imran	Biology	-----	Staff	

Professional Development

Mentoring new faculty members

Informing new teachers of the vocabulary of the academic curriculum, the mechanism for its implementation, and how to develop the study plan within the available time frame, along with the mechanisms and method of dealing with students, and methods of evaluating students.

Professional development of faculty members

Urging and training teachers to develop curriculum vocabulary, introduce scientific developments, and use different teaching and learning strategies in teaching (outcome-based learning - learning project-based learning - group work-based learning - problem-

based learning - community-based learning - self-learning) and mechanisms and calendar methods.

1- Acceptance Criterion

(Admission is central and according to instructions issued by the Ministry of Higher Education. Acceptance rates and student numbers are determined annually by the Ministry).

The most important sources of information about the program

University registration management.

Department management

The college's official website on the Internet

Program Development Plan

1. Periodic review of courses.
2. Preparing annual reports for the courses, specifying the development plan for the course.
3. Follow the system of internal and external evaluators for the program
4. Active participation of program beneficiaries in developing the program.
5. Conducting educational workshops and advanced courses in the practical aspect
6. Organizing summer training hours to develop craft skills

Curriculum Skills Map

				Required learning outcomes of the program																				
Year/ Level	Course Code	Course Name	Essential or Optional	Cognitive objectives							Program skill objectives							Emotional and value goals						
				A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	C6	C7
The first stage - first course.	MU0511101	General Chemistry 1	Essential	✓	✓		✓	✓			✓			✓			✓				✓			
	MU0511105	Medical Terminology	Essential				✓					✓									✓		✓	
	MU0511102	Human Biology 1	Essential	✓	✓	✓	✓	✓	✓		✓			✓			✓	✓	✓		✓	✓		
	MU0511103	Laboratory Instruments 1	Essential	✓	✓			✓		✓		✓	✓	✓							✓			
	MU0511106	Medical Ethics	Optional												✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MU0511107	Computer Applications 1	Optional								✓		✓			✓						✓		
	MU0511108	Human Rights	Optional														✓	✓	✓	✓	✓	✓	✓	✓
	MU0511104	English Language	Optional								✓	✓		✓			✓		✓	✓	✓	✓	✓	
The first stage - the second	MU0511201	General Chemistry 2	Essential	✓	✓		✓	✓			✓			✓			✓							
	MU0511203	Anatomy	Essential	✓	✓		✓															✓		
	MU0511202	Human biology 2	Essential	✓	✓	✓	✓	✓	✓		✓		✓		✓		✓		✓		✓		✓	

course.	MU0511204	Laboratory instruments 2	Essential		√			√		√	√	√	√							√		
	MU0511205	Computer Applications 2	Optional							√	√		√		√							
	MU0511206	Arabic language	Optional														√	√	√			
Year/ Level	Course Code	Course Name	Essential or Optional	Cognitive objectives							Program skill objectives							Emotional and value goals				
The second stage - the first course	MU0512101	Medical Bacteriology1	Essential	√	√	√	√	√			√				√	√	√		√	√	√	
	MU0512102	Biochemistry1	Essential	√	√		√			√						√						
	MU0512103	Human physiology1	Essential	√	√		√											√		√		
	MU0512104	Histology1	Essential	√	√	√	√	√		√		√		√	√	√			√	√		
	MU0512105	Molecular Biology1	Essential	√	√	√	√		√	√				√	√					√		
	MU0512106	Medical Parasitology1	Essential	√	√		√	√		√		√		√	√	√			√	√		
	MU0512107	Crimes of the defunct Baath regime	Optional															√	√			
The second stage - the second course.	MU0512201	Medical Bacteriology2	Essential	√	√	√	√	√	√		√				√	√	√		√	√		
	MU0512202	Biochemistry2	Essential	√	√		√			√								√	√		√	
	MU0512203	Human physiology2	Essential	√	√		√															
	MU0512204	Histology2	Essential	√	√				√	√		√		√	√	√			√	√		

	MU0512205	Medical Parasitology 2 & Entomology	Essential	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓					✓	✓		
	MU0512206	Descriptive Biostatics	Optional				✓				✓				✓					✓	✓			
Year/ Level	Course Code	Course Name	Essential or Optional	Cognitive objectives							Program skill objectives							Emotional and value goals						
				A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	C6	C7
The third stage - the first course.	MU0513101	Histopathology1	Essential	✓	✓	✓	✓				✓		✓		✓	✓	✓		✓		✓	✓	✓	
	MU0513102	Hematology	Essential	✓	✓	✓	✓				✓		✓		✓	✓	✓		✓		✓		✓	✓
	MU0513103	Medical Mycology	Essential	✓	✓	✓	✓		✓		✓		✓		✓		✓					✓	✓	
	MU0513104	Metabolic Disorders	Essential	✓	✓		✓																	
	MU0513105	Medical Genetics	Essential	✓	✓		✓				✓											✓	✓	
	MU0513106	Immunology	Essential	✓	✓	✓	✓		✓		✓						✓	✓				✓	✓	
	MU0513107	Advanced Laboratory Techniques	Essential		✓	✓				✓	✓	✓	✓	✓	✓							✓	✓	
	MU0513108	Computer Applications	Optional								✓	✓					✓						✓	
The third stage - the second course.	MU0513201	Histopathology	Essential	✓	✓	✓	✓				✓		✓		✓	✓	✓				✓	✓	✓	
	MU0513202	Hematology 2	Essential	✓	✓	✓	✓		✓		✓		✓		✓	✓	✓				✓	✓		
	MU0513203	Medical Virology	Essential	✓	✓	✓	✓				✓				✓	✓	✓				✓	✓		
	MU0513204	Endocrinology	Essential	✓	✓		✓				✓				✓			✓				✓		

	MU0513205	Medical Genetics 2	Essential	✓	✓		✓			✓					✓	✓			✓	✓					
	MU0513206	Immunology 2	Essential	✓	✓	✓	✓		✓	✓					✓	✓			✓	✓					
	MU0513207	Analytical Biostatistics	Optional				✓	✓		✓			✓		✓			✓	✓						
	MU0513208	Computer Applications 2	Optional					✓			✓	✓	✓						✓						
The fourth year / annually	Year/ Level	Course Code	Course Name	Essential or Optional	Cognitive objectives							Program skill objectives							Emotional and value goals						
				A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	C6	C7	
		MU0514001	Clinical Immunology	Essential	✓	✓	✓	✓		✓		✓				✓	✓				✓	✓			
		MU0514002	Diagnostic Bacteriology	Essential	✓	✓	✓	✓		✓		✓				✓	✓	✓			✓	✓			
		MU0514003	Clinical Chemistry	Essential	✓	✓		✓	✓		✓					✓	✓				✓	✓			
		MU0514004	Medical Parasitology	Essential	✓	✓	✓	✓		✓		✓		✓		✓	✓				✓	✓			
		MU0514005	Blood Transfusion	Essential	✓	✓	✓	✓			✓		✓		✓	✓	✓			✓	✓				
		MU0514006	Histopathology	Essential	✓	✓	✓	✓			✓		✓		✓	✓	✓			✓	✓				
		MU0514007	Laboratory Management + Research Methods Teaching	Essential					✓			✓					✓	✓	✓	✓	✓	✓	✓		
		MU0514008	Graduation Project	Essential					✓		✓	✓				✓	✓	✓				✓			