

**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-Kut

**Faculty/Institute:** AlKut University College

**Scientific Department:** ..Technical Medical Laboratories

**Academic or Professional Program Name:** Technical Medical Laboratories

**Final Certificate Name:** Bachelor Degree in Technical Medical Laboratories

**Academic System:** Annual

**Description Preparation Date:** 1-1-2024

**File Completion Date:**

**Signature:**

**Head of Department Name:**

**Date:**

**Signature:**

**Scientific Associate Name:**

**Date:**

**The file is checked by:**

**Department of Quality Assurance and University Performance**

**Director of the Quality Assurance and University Performance Department:**

**Date:**

**Signature:**

**Approval of the Dean**

### **1. Program Vision**

1. Establishing specialized medical laboratories
2. Creating postgraduate studies (master's and doctoral) in pathological analysis specializations
3. Hosting pathological analysis specialists from high rank universities in the world in order to raise the academic level of graduates and enable it to be in the ranks of high education levels colleges and universities.

### **2. Program Mission**

The Department of Medical Laboratory Technologies was established in the academic year 2015/2016 to be part of the scientific departments at Al Kut University College. It includes morning and evening studies and follows the annual system, as the duration of study in the department is four years, after which the student will be graduated and holds a bachelor's degree in Pathological analyses technologies. The department includes a number of specialized laboratories that are equipped with the best modern laboratory equipment. It contributes effectively to develop the student's scientific capabilities and it is matching the requirements of the theoretical aspect at the level of each academic subject.

### **3. Program Objectives**

- 1- The graduate must be proficient in the process of drawing blood and dealing with all laboratory samples, collecting and transporting them, with the ability to deal with all laboratory equipment.
- 2- The graduate must be proficient in microbiology examinations with the necessary knowledge of how to use all the necessary techniques to diagnose the bacterial causes of diseases and being able to give the correct opinion on

this subject while conducting examinations in all branches of life, including viruses, fungi, parasites and bacteria.

3- The graduate should be able to study clinical immunology and identify the immune mechanism responsible for the pathogenesis of common immune diseases. And to distinguish the different diagnostic methods as well as the important differential examinations for each disease and conduct them.

4- The graduate should be able to practice basic skills in chemistry and be familiar with how to prepare solutions of different concentrations, in addition to diagnosing organic and life materials and conducting laboratory tests related to biochemistry, including hormones and others.

5- The graduate must be proficient in the histology subject, prepare histological sections for that purpose, and perform all partial tests, pathological parameters, and staining for histological sections.

6- The graduate should be able to deal with what happens with blood transfusion and donation, diseases acquired through blood transfusion, and conduct all laboratory tests related to hematology.

7- Its ability to deal with all modern technologies, including DNA analysis and forensic medicine.

#### **4. Program Accreditation**

The program is accredited by the Ministry of Higher Education and Scientific Research

#### **5. Other external influences**

Is there a sponsor for the program?

Quality Assurance Program of the Ministry of Higher Education and Scientific Research.

6. Program Structure				
Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				
Department Requirements				
Summer Training				
Other				

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

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
Fourth Grade	ML42	Diagnostic Microbiology	theoretical	practical
			2	4

8. Expected learning outcomes of the program	
<b>Knowledge</b>	
A1–The ability to apply knowledge in biological and chemical sciences.	Theoretical, practical, applied lectures, daily assignments, and discussions
A2– The ability to complete pathological analysis tasks in a scientific manner based on basic science	
<b>Skills</b>	
B1 – The ability to prepare and carry out experiments Laboratory, in addition to interpretation and analysis results and preparing the final report.	Theoretical, practical, applied lectures, daily assignments, and discussions
B2 – The ability to diagnose pathological injuries through laboratory work, to achieve the desired goal practically in the medical fields	Theoretical, practical, applied lectures, daily assignments, and discussions
<b>Ethics</b>	



<p>C1– The ability to use modern technologies, skills, and tools necessary to practice diagnosis, patients depending on laboratory work mechanisms.</p> <p>C 2– Realizing the moral responsibility to give the most accurate results</p>	<p>Theoretical, practical, applied lectures, daily assignments, and discussions</p>
<p>D – General and transferable skills (to other skills related to employability and personal development).</p> <p>D1– The ability to work within a team that includes all medical and health specialties.</p> <p>D2– The ability to develop oneself and work in the field</p>	<p>Theoretical, practical, applied lectures, daily assignments, and discussions</p> <p>Exams, assignments, daily assignments, discussions, laboratory reports, and a graduation project</p>

<b>9. Teaching and Learning Strategies</b>
Theoretical, practical, applied lectures, daily assignments, and discussions

<b>10. Evaluation methods</b>
Exams, assignments, daily assignments, discussions, laboratory reports, and a graduation project

<b>11. Faculty</b>						
<b>Faculty Members</b>						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Lecturer–PhD	Biotechnology	Molecular Biology			1	
Assist. Lecturer–MSc	Microbiology	Microbiology				1

<b>Professional Development</b>
Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

**Professional development of faculty members**

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

**12. Acceptance Criterion**

**(Setting regulations related to enrollment in the college or institute, whether central admission or others)**

**Central admission to the Ministry of Higher Education and Scientific Research**

**13. The most important sources of information about the program**

Student guide for central admission prepared by the Ministry of Higher Education and Scientific Research.

**14. Program Development Plan**

Extracurricular activity

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Fourth Grade	ML42	Diagnostic Microbiology	Basic	X	X			X	X			X	X		

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

## Course Description Form

1. Course Name:	
Diagnostic Microbiology	
2. Course Code:	
ML42	
3. Semester / Year:	
1 <sup>st</sup> and 2 <sup>nd</sup> of Fourth Year	
4. Description Preparation Date:	
1-1-2024	
5. Available Attendance Forms:	
Normal attending in the class	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 hours practical application and 2 hours for theoretical studying	
7. Course administrator's name (mention all, if more than one name)	
Name: Arkan Hasan Frayyeh, PhD Email: <a href="mailto:arkanhf@yahoo.com">arkanhf@yahoo.com</a>	
8. Course Objectives	
<b>Course Objectiv</b>	The student will gain knowledge about diagnostic bacteria in terms of: – Identify the shapes and types of bacteria under the microscope, and take samples from the infected person and culture them for the purpose of diagnosing the type of bacteria and identifying the disease causing it in order to prescribe the appropriate treatment as well knowing its transmission and epidemiological methods for the purpose of avoiding its spread and knowing ways of prevention
9. Teaching and Learning Strategies	
<b>Strategy</b>	A1– The ability to identify most types of bacteria that cause disease and those that do not cause disease as well. B – Skills related to diagnostic bacteria B1– The ability to understand how infection occurs transmitted.

	<p>B2 – The ability to understand the basic steps for the purpose of diagnosing bacterial infection and how to isolate it from patient to be diagnosed in the aim of prescribing appropriate treatment</p> <p>C – Thinking skills.</p> <p>C 1 – The ability to think about all the possibilities or circumstances that help bacteria cause disease.</p> <p>C2 – Developing the student’s ability to deal with information as a solution method.</p> <p>D– General and transferable skills (other skills related to employability and personal development)</p>
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**10. Course Structure**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
				<p>Method of giving lectures.</p> <ul style="list-style-type: none"> <li>– Self-learning, discussion sessions.</li> <li>– Show explanatory videos.</li> <li>– Exercises and activities in the classroom, focusing on the practical and laboratory aspects.</li> <li>– Directing students to some websites to benefit from them to develop their capabilities.</li> <li>– Solving problems as extracurricular assignments.</li> </ul>	<p>Participation in the classroom.</p> <ul style="list-style-type: none"> <li>– Providing various activities.</li> <li>– Not less than four semester written tests during the academic year, in addition to the final exam</li> </ul> <p>Theoretical and practical.</p> <ul style="list-style-type: none"> <li>– Assignments and reports to solve questions in the form of extracurricular activities</li> </ul>

**11. Course Evaluation**

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
<b>12. Learning and Teaching Resources</b>	
Required textbooks (curricular books, if any)	Basic lectures and textbook
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	<p>1- Lapage SP(1976). Biochemical Tests for Identification of Medical Bacteria. <i>J Clin Pathol</i>.</p> <p>2-Murray, P. R., Rosenthal, K. S., &amp; Tenover F. C. (2003). <i>Medical Microbiology</i>. Elsevier Health Sciences.</p> <p>3-Ryan, K. J., &amp; Tenover F. C. (2004). <i>Medical microbiology</i>. McGraw Hill</p>

Week s	Subject				
1	<b>Diagnostic Microbiology: purpose and philosophy</b>	Diagnostic Microbiology: purpose and philosophy			
2	<b>Laboratory safety</b>	General safety considerations			
		Biohazards and practices specific to microbiology in general	-Biological safety cabinet		
			-Protective clothing		
			-Decontamination		

			-Personal practice			
		Classification of biological agents on the basis of hazard	- Specific agents			
		Special precautions for specific areas of clinical microbiology	-Microbiology			
			-Virology			
			-Mycology			
			-Parasitology			
			-Serology			
3	<b>-Managing the clinical microbiology laboratory: effective</b>	<b>-Managing the clinical microbiology laboratory effective patient care in a cost</b>	-Education -Limitation on testing -Strategies for choosing methods			
	<b>patient care in a cost</b>	Rapid detection of infectious agents	-Visual test			
				-Agglutination methods		
				-Automation	-VITIC 2 -ELISA -RIA -HPLC -PCR	
		-Decreasing analysis time for identification results	-Noncommercial methods -Commercial methods			
4	<b>-Selection, collection, and transport of specimens for microbiological examination</b>	<b>-Selection, collection, and transport of specimens for microbiological examination</b>				
			-Anaerobic collection procedures			
			-Anaerobic specimen transport			
5	<b>-Optical methods for</b>	Examination of fresh material	-Direct examination of clinical specimens			

	<b>laboratory diagnosis of infectious diseases</b>		-Slightly modified direct preparations of clinical materials		
		-Optical methods for laboratory diagnosis of infectious diseases	-Preparation of a smear		
			-Gram stain		
			-Acid-fast stain		
			-Differential stains for parasites		
			-Differential stains for blood smear and tissue sections		
			-Fungal stains		
			-Acridine orange		
	-Rhodamine-auramine				
<b>6</b>	<b>-Cultivation and isolation of viable</b>	-Preparation and characteristics of certain frequently used media	-Blood agar, Chocolate agar....etc		

	<b>pathogens</b>				
<b>7-8</b>	<b>Microbiologic al methods for identification of microorganisms</b>	Basic approaches to identification of pathogens	-Colonial morphology -Gram stain		
		Rapid biochemical tests	Catalase, oxidase, coagulase, spot indole, bile solubility,...etc.		
		Conventional biochemical tests	-Methyl red, sugar fermentation, urease production, ...etc.		
		Modification of conventional biochemical test	Such as API 20E		
<b>9-10</b>	<b>- Nontraditional methods for identification of pathogens or their products</b>	Particle agglutination, ELISA, PCR, .....etc.	Important properties -Laboratory diagnosis		



11	<b>-Antibiotic susceptibility tests</b>	Disc diffusion method			
		MIC			
		VITC			
12-13	<b>Methods for identification of etiological agents of infectious disease</b>	-Staphylococci -Streptococci -Neisseria -Enterobacteriaceae -Pseudomonas -Other bacteria			
14-15	<b>Diagnosis by organ system Blood stream infections</b>	General considerations	causes	Bacteria, fungi, parasites and viruses	
			Type of bacteremia		
			Type of blood stream infections	Intravascular infections Extravascular infections	
		Detection of bacteremia	-Specimen collection	-Preparation of the site -Specimen volume -Timing of collection	
				Miscellaneous matters	Anticoagulation -Dilution -Blood culture media and additives
			-Culture techniques	Conventional blood culture	-Incubation conditions and detecting growth
			Handling positive blood culture		
			Special problems and unusual microorganisms	-Fungi, Mycobacteria, Brucella,...etc	.
16-17	<b>Meningitis and other infections of the central nervous</b>	General considerations	Anatomy		
			-Routes of infections		
			-Diseases of the Central nervous	-Meningitis	
				-Encephalitis	

	<b>system</b>		system	-Brain abscess	
		Laboratory diagnosis Meningitis	-Specimen collection and transport		
			-CSF findings	Leukocytes, protein and glucose	
			-Visual detection of etiological agents	-Staining -Wet preparation	
			-Direct detection of etiological agents	-Serology -Molecular methods	
			-Culture		
<b>18-19</b>	<b>Infection of the respiratory tract</b>	General consideration, anatomy and normal state of respiratory tract			
		-Flora of respiratory tract			
		-pathogenic mechanisms used by agents			
		-Upper respiratory tract	-Etiological agents		
			-Collection and transport- of		

			specimens		
			-Direct visual examination		
			-Culture		
			Nonculture methods	PCR, RIA	
20-21	Infection of the urinary tract	-General considerations	-Anatomy		
			-Resident microorganisms of the urinary tract		
		-Infection of the urinary tract	-Etiological agents		
		-Pathogenesis	-Routes of infection		
			-The host-parasite relationship		
		-Type of infection	Urethritis, cystitis, pyelonephritis		
		-Laboratory diagnosis	-Specimen collection	-Clean-catch midstream urine	
				-Straight catheterized urine	
				-Bladder aspiration	
				-Indwelling catheter	
			-Specimen transport		
			-Screening procedures	-Gram stain	
-Indirect indices -Automated	Nitrate reductase, leukocyte esterase, catalase tests				
	System -General urine examination				

			Urine culture	-Inoculation and incubation	
				- Interpretatio	

				n of urine culture		
22	Genital tract infections		-Anatomy			
			-Resident microbial flora			
			-Sexually transmitted diseases and other genital tract infections			
		Genital tract infections	Etiological agents			
			- Routes of transmission			
			-Clinical manifestations	Asymptomatic		
				-Dysuria		
				-Urethral discharge		
				-Lesions of the skin and mucous membranes		
				-Vaginitis		
-Cervicitis						
-Other infections						
	-Lower genital tract infections	-Urethritis, cervicitis and vaginitis	-Specimen collection			
			-Direct microscopic examination			
			-Culture			
			-Nonculture Methods			
23-24	Gastrointestinal tract	-General considerations	-Anatomy			
			-Resident microbial			

	infections		flora		
		-Gastroenteritis	-Pathogenesis	-Host factors	
				-Microbial factors	-Primary pathogenic mechanisms
					-Toxins
					-Attachment Invasion
	Etiological agents				
-Laboratory diagnosis of gastrointestinal tract	Specimen collection and	General comments			

		infections	transport	-Stool specimens for bacteriological culture	
				-Stool specimens for ova and parasites	
				-Stool specimens for viruses	
			Direct detection of agents	-Wet mounts -Stains -Antigen detection -Molecular techniques	
			-Laboratory diagnosis of <i>Clostridium difficile</i>		

25	Infections of the eyes, ears and sinuses	-Anatomy			
		--Resident microbial flora			
			-Specimen collection and transport		
			-Direct visual examination		

			-Culture		
			-Nonculture methods		
26	Skin, Soft tissue and wound infections	-General considerations			
		-Laboratory diagnosis procedures	-Gram stain		
			-Culture		
27	Normal sterile body fluids, bone and bone marrow and solid tissue	-Specimens from sterile body sites	-Fluids	-Pleural fluid	
				-Peritoneal fluid	
				-Pericardial fluid	
				-Joint fluid	
		-Bone	Bone marrow aspiration or biopsy		
		-Laboratory diagnosis	Specimen	-Direct	

			collection and transport	examination	
				-Culture	
28	-Laboratory methods diagnosis parasitic infections	-Specimen collection and transport			
		-Specimen processing			
		-Microscopic examination			
29	-Laboratory methods in basic mycology	Collection, and transport of clinical specimens	-Direct microscopic examination		
			-Culture		
30	-Laboratory methods in basic virology	Specimen selection and collection			
		-Specimen transport and storage			
		-Specimen processing			
		Virus detection methods	-Cytology and histology		
			-Electron microscopy		
			Immunodiagnosis (antigen detection)		
			-Molecular detection		
-Cell culture					
-Serology (antibody detection)					