Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic accreditation
Department Accreditation

Academic Program and Course Description Guide

2025

University name: ..... **Northern Technical University**.....

College/Institute: ....**AL-Hawija Technical Institute**.....

Scientific Department: Department of .....**Medical laboratory Techniques**.....

Name of the academic or professional program: Diploma in Medical laboratory

Name of final degree: .....Diploma in Medical laboratory .....

Academic system: Courses

Description preparation date : **28/5/2025**

File filling date: **28/5/2025**

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Date: 28/5/2025

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The file Checked by the Division of Quality Assurance and University Performance
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Date : **28/5/2025**
Signature:

Authentication of the Dean

1–Program vision:
Achieving leadership and professional integrity in medical laboratory sciences and excellence in scientific research and practice in the field of medical work and community service.

2-Program message:
Qualifying high-quality medical laboratory specialists that enables them to compete in the labor market, contribute to community service, and promote scientific research.

3- Program objectives
the graduates must be able to possess the skills: .Apply and practice basic medical laboratory sciences in the work environment .Continuous self-learning in the field of medical laboratories Quality standards in the field of medical laboratory work, professionally and academically

4-Program accreditation:
Program accreditation has been applied for

5-Other external influences:
Nothing

6–Program structure:

Program Structure	Number of Courses	Study Unit	Percentage	Notes *
University requirements	10	18	18.75%	
Institute requirements	5	14	14.58%	
Department requirements	23	64	66.66%	

summer training	2			
Other	/			

7- Program description				
Year/level	Course or course code	Name of the course or course	Hours	Note
2023-2025/ first	**NTU 100**	Democracy and Human Rights	2	
	NTU 200	English language 1	2	
	NTU 102	Computer 1	1	
	NTU 104	Arabic language 1	1	
	TIH 106	Physiology	2	
	TIH 107	Anatomy	2	
	TIH 108	Safety in lab. & workshop	2	
	MLT 112	Medical terminology	2	
	MLT 115	Analytical chemistry	3	
	MLT 113	Histology teqniques	3	
	MLT 114	Medical Lab. Instruments	3	
	MLT 118	Histology	3	
	MLT 117	Foundations of nursing	3	
	MLT 119	Organic Chemistry	3	
	MLT 112	Medical Lab. Techniques	3	
	NUT 116	**Blood Transfusion**	3	
	MLT120	**First Aid**	2	
	NTU201	**Computer 2**	1	
	NTU 202	**Arabic language 2**	2	
	NTU 202	**Crimes of the Baath regime in Iraq**	2	
	MLT208	**Biochemistry**	2	
	MLT214	**Principle of Immunology**	2	
	MLT206	**Protoza**	2	
	MLT210	**Principles of Bacteriology**	2	
	MLT209	**Virology**	2	
	MLT205	**Introduction of Hematology**	2	
	MLT211	**Clinical chemistry**	1	
	MLT216	**Immunopathology**	1	

	MLT213	**Worms**	1	
	MLT210	**Pathogenic Bacteria**		
	MLT212	**Medical Mycology**		
	MLT217	**Cytological Hematology**		
	MLT215	**Proposal**		

8- Expected learning outcomes of the programme

Knowledge:

1- Learn how to collect information from the patient.
A2- Identify the pathogens and their relationship with each other
A3- Identify side effects according to the patient's laboratory results

Skills

1-Teamwork skills.
2- Computer and Internet skills
3-Communication skills such as English
4-Leadership skills and taking responsibility.
5-The student qualifies to pass recruitment interviews.

Value

1-The student acquires the concepts and basics of anesthesia and intensive care
2-Analyzing the problems facing its employees and how to develop the necessary solutions.
3-Evaluating the proposed solutions and choosing the best ones.

9-Teaching and learning strategies

The teacher explains the theoretical material on the blackboard using a slide projector, paper lectures, educational packages, and methodological and summer training in hospitals.

10-Evaluation methods

Daily, quarterly and final tests, submitting weekly reports

11-The teaching staff

Faculty members						
Academic rank	**Specialization**		**Special requirements/skills (if any)**		**preparation of the teaching staff**	
	General	**Specialized**			**lecturer**	**staff**
Ass..prof	biology	microbiology			Staff	
lecturer	Biology	parasitology			Staff	
lecturer	chemistry	organic			Staff	
lecturer	Water resources engineering	Water resources			Staff	
.lecturer	Chemistry	Biochemistry			Staff	
Ass.lecturer	Biology	immunity			Staff	
Ass. lecturer	Biology	genetic			Staff	
Ass. lecturer	chemistry	Biochemistry			Staff	
Ass. prof	Quran science	Quran science			Staff	

Professional development
Orienting new faculty members
Professional development
Professional development for faculty members

12-Acceptance criterion
- The student's admission criterion is determined according to the central admission plan within the plan of the Ministry and the student's preparatory branch, his grade point average and his desire. After that, the student is interviewed in a special interview at the institute

13- The most important sources of information about the program
-External sources (the Internet)

- Scientific research and its latest developments
  -Methodological books

14-Program development plan
1- Adding information on all topics related to anesthesia and intensive care. 2- Learn about recent scientific developments. 3- Participation in international and local conferences. 4- Participation in scientific workshops inside and outside Iraq. 5-Hosting scientific competencies in the field of specialization

Program skills chart

Learning outcomes required from the program															
Values				skills				Knowledge				Essential or optional	Course name	Course code	Year/level
C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A 1				
		◉	◉				◉				◉	Essential	Democracy and Human Rights	**NTU 100**	2023-2025/1st.
									◉		◉	Essential	English language 1	**NTU 200**	
						◉	◉			◉	◉	Essential	Computer 1	**NTU 102**	
										◉	◉	Essential	Arabic language 1	**NTU 103**	
						◉	◉					optional	Physical Activity	**NTU 104**	
		◉	◉				◉				◉	Essential	Physiology	**TIH 107**	
			◉			◉			◉	◉	◉	Essential	Anatomy	**TIH 108**	
				◉			◉			◉	◉	Essential	Safety in lab. & workshop	**TIH 109**	
										◉	◉	Essential	Medical terminology	**MLT 115**	
		◉		◉		◉	◉			◉	◉	Essential	Analytical Chemistry	**MLT 113**	
		◉	◉	◉	◉				◉	◉	◉	Essential	Histology Techniques	**MLT 114**	
		◉	◉		◉	◉			◉	◉	◉	Essential	Medical Lab. Instruments	**MLT 118**	
			◉	◉					◉	◉	◉	Essential	Histology	**MLT 117**	
			◉	◉	◉				◉	◉	◉	Essential	Foundations of nursing	**MLT 119**	
						◉		◉	◉	◉	◉	Essential	Organic Chemistry	**MLT 112**	
	◉	◉	◉	◉	◉	◉	◉		◉	◉	◉	Essential	Medical Lab. Techniques	**MLT 116**	.
						◉		◉	◉	◉	◉	Essential	Blood Transfusion	**NUT 120**	
										◉	◉	optional	First Aid		
		◉				◉					◉	Optional	Psychology	**NTU201**	
										◉	◉	Essential	Computer 2	**NTU202**	

										◉	◉	Essential	Arabic language 2	**NTU 203**	
										◉	◉	Essential	Crimes of the Baath regime in Iraq	**NTU 204**	
		◉	◉							◉	◉	Essential	Biostatistics	**TIH 202**	
	◉	◉	◉			◉		◉	◉	◉	◉	Essential	Biochemistry	**MLT208**	
	◉	◉	◉			◉	◉			◉	◉	Essential	Principle of Immunology	**MLT214**	
			◉	◉				◉	◉	◉	◉	Essential	Protozoa	**MLT206**	
	◉	◉	◉		◉	◉			◉	◉	◉	Essential	Principles of Bacteriology	**MLT210**	
		◉	◉		◉	◉				◉	◉	Essential	Virology	**MLT209**	
		◉	◉			◉			◉	◉	◉	Essential	Introduction of hematology	**MLT205**	
	◉	◉	◉		◉		◉	◉	◉	◉	◉	Essential	Clinical chemistry	**MLT211**	
	◉	◉	◉			◉			◉	◉	◉	Essential	Immunopathology	**MLT216**	
			◉		◉	◉			◉	◉	◉	Essential	Worms	**MLT213**	
◉	◉	◉	◉		◉	◉			◉	◉	◉	Essential	Pathogenic Bacteria	**MLT210**	
		◉			◉		◉		◉	◉	◉	Essential	Medical Mycology	**MLT212**	
	◉	◉	◉	◉		◉	◉		◉		◉	Essential	Cytological Hematology	**MLT217**	
	◉	◉	◉			◉	◉		◉		◉	Essential	Proposal	**MLT215**	

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical Technical lab. Techniques Department
3. Course title/code	Democracy and Human Rights NTU100
4. Programme (s) to which it contributes	Medical Laboratory Technologist Diploma
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical) * Scientific discussions, seminars, other activities
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1 - Providing students with basic concepts related to democracy and human rights.

2- Knowledge of political systems, methods of elections and public freedoms.

3- Developing the legal and constitutional culture among students.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

1- Enabling students to understand the concept of democracy and the rights to be implemented in the field of human rights.

2- Developing the knowledge aspects of the constitution, the legal state and human rights guarantees.

B - The skills objectives of the course.

Enable students to understand the concept of democracy and the rights to be done in the field of human rights and how to defend these rights. And know the guarantees related to them.

Teaching and learning methods

((Theoretical lectures / interactive lectures))

Evaluation methods

((Oral tests / written tests / weekly reports / daily attendance / participation and interaction in lectures / semester and final exams))

C- Emotional and value goals

Carrying out duties in the workplace with professional motives

Teaching and learning methods

((Theoretical lectures / seminars / debate work between students))

Evaluation methods

((Oral Tests / Written Tests / Observation / Student Cumulative Record))

D - Transferable general and qualifying skills (other skills related to employability and personal development).

Understand the concept of democracy and the rights to be implemented in the field of human rights.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	Human rights, definition, objectives Human rights in ancient civilizations / Human rights in heavenly laws	Knowledge and application	Theoretical	Tests & Reports
2	2	Human Rights in Contemporary and Modern History (International Recognition of Human Rights since the First World War and the League of the United Nations) / Regional Recognition of Human Rights: European Convention on Human Rights 1950, American Convention on Human Rights 1969, African Charter on Human Rights 1981, Arab Charter on Human Rights 1994	Knowledge and application	Theoretical	Tests & Reports
3	2	NGOs and human rights (ICRC, Amnesty International, Human Rights Watch, National Human Rights Organizations	Knowledge and application	Theoretical	Tests & Reports
4	2	Human rights in Iraqi constitutions between theory and reality / the relationship between human rights and public freedoms: -1In the Universal Declaration of Human Rights. -2In regional charters and national constitutions.	Knowledge and application	Theoretical	Tests & Reports
5	2	Economic, social and cultural human rights , Civil and political human rights / Modern human rights : Facts in development , Right to clean environment , Right to solidarity , Right to religion	Knowledge and application	Theoretical	Tests & Reports
6	2	Guarantees of respect and protection of human rights at the national level, guarantees in the Constitution and laws, guarantees in the principle of the rule of law, guarantees in constitutional oversight, guarantees in freedom of the press and public opinion, the role of non-governmental organizations in respecting and protecting human rights / guarantees, respect and protection of human rights at the international level: .1Role of the United Nations and its specialized agencies in providing safeguards -2The role of regional organizations (Arab League, European Union, African Union, Organization of American States, ASEAN.(.3Role of international, regional non-governmental organizations and public	Knowledge and application	Theoretical	Tests & Reports

		opinion in respecting and protecting human rights			
7	2	The general theory of freedoms: the origin of rights and freedoms, the legislator's position on public rights and freedoms, the use of the term public freedoms	Knowledge and application	Theoretical	Tests & Reports
8	2	Organizing public freedoms from the previousness of equality: the historical development of the concept of equality The modern development of the idea of equality -Gender equality -Equality between individuals according to their beliefs and race to public authorities	Knowledge and application	Theoretical	Tests & Reports
9	2	Freedom of learning , freedom of the press , freedom of assembly Freedom of association, freedom of work Right of ownership	Knowledge and application	Theoretical	Tests & Reports
10	2	Freedom of trade and industry Freedom of security and a sense of security Freedom to go and return Freedom of trade and industry Women's freedom	Knowledge and application	Theoretical	Tests & Reports
11	2	Scientific and technical progress and public freedoms The future of public freedoms	Knowledge and application	Theoretical	Tests & Reports
12	2	The crime of genocide	Knowledge and application	Theoretical	Tests & Reports
13	2	Democracy, its characteristics and types	Knowledge and application	Theoretical	Tests & Reports
14	2	Elections, their definition and types	Knowledge and application	Theoretical	Tests & Reports
15	2	Contemporary political systems	Knowledge and application	Theoretical	Tests & Reports

12. Infrastructure	
Required reading:	Available in free education and institute library
Main references (sources)	Available in free education and institute library
B - Electronic references, Internet sites...	Internet

13. Course development plan
1- Developing curricula appropriate to human rights developments. 2- Dividing the article into two parts, the first related to human rights and the second to democracy.

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical Technical lab. Hawija technical institute/ Medical Technical lab. Department
3. Course title/code	English Language NTU101
4. Programme (s) to which it contributes	Medical Laboratory Technologist Diploma
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and pract * Scientific discussions, seminars, other activities
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 1- Introducing the student to the basics of the English language with regard to the development of the four language skills (speaking, listening, reading and writing). 2- Introducing the student to the vocabulary of communication and academic writing English. 3- Developing students' skills to use and practice communication in English.	
10. Course outcomes and teaching, learning and evaluation methods	
A.Cognitive objectives A1- Introduce the student to the basics of the English language in terms of developing the four language skills (speaking, listening, reading and writing).	
B - The skills objectives of the course. B1 - Introducing the student to the vocabulary of communication and academic writing in English.	
Teaching and learning methods	
((Theoretical lectures / listening lectures / conversation lectures / interactive lectures / research in libraries and the Internet on specific topics)).	
Evaluation methods	
((Oral tests / written tests / weekly reports / daily attendance / participation and interaction in lectures / semester and final exams))	
C- Emotional and value goals C1- Develop students' skills to use and practice communication in English.C6- Training on how to deal with patients who have injuries resulting from traffic collisions and exposure to gunfire.	
Teaching and learning methods	
((Theoretical lectures / seminars / debate work between students / making reports in English))	
Evaluation methods	
((Oral Tests / Written Tests / Observation / Student Cumulative Record))	

D - Transferable general and qualifying skills (other skills related to employability and personal development).
D1- Improving students' discussion skills in English
D2- Raising students' research perceptions in writing reports, research and university theses using the English language

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 1 / Hello	Theoretical	Tests & Discussion
2	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 2 / Your world	Theoretical	practical test
3	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 3 / All about you	Theoretical	Tests & Discussion
4	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 4 / Family and Friends	Theoretical	Test
5	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 5 / The way I live	Theoretical	Tests & Discussion
6	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 6 / Every day	Theoretical	practical test
7	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 7 / My favourite	Theoretical	Tests & Discussion
8	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 8 / Where I live	Theoretical	practical test
9	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 9 / Times past	Theoretical	Tests & Discussion
10	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 10 / We had a great time!	Theoretical	practical test
11	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 11 / I can do that	Theoretical	Tests & Discussion
12	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 12 / Please and Thank you	Theoretical	practical test
13	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 13 / Here and now	Theoretical	practical test
14	2	Grammar/ Vocabulary/ Skills Work/ Everyday English	Unit 14 / It’s time to go	Theoretical	practical test
15	2	Review	Review	Theoretical	Discussion

12. Infrastructure	
Required reading:	**New Headway Plus / Beginner/ John and Liz Soars / Oxford University Press / 2014**
Main references (sources)	**1. An A-Z of English Grammar & Usage / Geoffrey Leech / Longman / 1990** **2. Common Mistakes in English / T.J. Fitikides / Longman 2002** **3.English Grammar in Use / Raymond Murphy / Cambridge University Press 2004**
Recommended books and references (scientific journals, reports,...)	**Express English / Omer Al- Hourani / Jordan**
B - Electronic references, Internet sites...	**Express English / Omer Al- Hourani / Jordan**

13. Course development plan
1- Developing appropriate curricula for university graduates 2- Holding seminars and conferences aimed at updating school curricula

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Department
3. Course title/code	Computier1 **NTU102**
4. Programme (s) to which it contributes	Medical Laboratory Technologist Diploma
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

2- Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

3. Perform his duties at the workplace for professional motives.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

B - The skills objectives of the course.

B1 - Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

Teaching and learning methods

((Theoretical lectures / practical lectures / field visits / solving examples / seminars / summer training))

Evaluation methods

((Oral exams / written tests / weekly reports / daily attendance / semester and final exams))

C- Emotional and value goals

C1- Perform his duties at the workplace for professional motives.
Teaching and learning methods
((Theoretical lectures / practical lectures / field visits / solving examples / seminars / summer training))
Evaluation methods
((Oral Tests / Written Tests / Observation / Student Cumulative Record))
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Improve their discussion skills. D2- Raising their research perceptions and transferring the student from the stage of teaching to learning.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
2&1	2	Introduction to the computer / computer system / information technology / types of computers / input units / central processing unit / output units / main memory and its types / data storage in memory / factors affecting computer performance Definition of software and its types / systems software: operating systems / programming languages and software systems / applied software.	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
3	2	Introduction to Windows / its features / operating the device / shutting down the device / using the mouse / windows screen components: taskbar: icons: and their types (standard and general.(	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
4	2	Control Panel / Desktop Control / Screen Saver / Window Colors and Lines / Screen Settings / Adjust Screen Colors / Modify Time and Date / Volume / Change Between Mouse Buttons / Double-Click Speed Control / Change Mouse Pointer / Control Mouse Speed / Install and Uninstall Programs	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
5	2	Minimize and enlarge the window / final closure / temporary closure / move the window / control the capacity of the window / ways to run applications and programs	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
6	2	Order start menu items / delete start menu items / add submenu to start menus / add new button to start menu	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
7	2	Basic System Information / Stop Unwanted Applications Windows explorer window finder / My computer icon / my computer window parts	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
9&8	2	Recycle Bin (delete, retrieve and empty the basket) / My Document icon	Knowledge and practical application	Practical + Theoretical	Tests & Discussion

11&10	2	Definition of files and folders / Identification of files and folders / Properties of files Definition of folders / Create files and folders / Change the name of files and folders / Move file or folder / Copy file or folder / Search for file or folder / Create a shortcut icon for an application or file	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
13&12	2	Calculator / Notepad / WordPad / Use the memo to edit and create the file Paint / Screen components / Create drawings / Select front and background colors / Choose brush font size / Select and select the drawing tool / Save drawing / Make drawing desktop background / Quit Paint Entertainment programs Media player	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
15&14	2	Viruses / Reason for naming / Definition / Ways of spreading the virus / Symptoms of infection with the virus / Protection methods / Types of viruses Computer crimes / theft / hackers	Knowledge and practical application	Practical + Theoretical	Tests & Discussion

12. Infrastructure	
Required reading:	Available in the free department and library of the institute
Main references (sources)	Available in the free department and library of the institute
Recommended books and references (scientific journals, reports,...)	Internet

13. Course development plan
1- Developing curricula adapted to the labor market 2- Holding seminars and scientific conferences aimed at updating the curricula 3- Follow-up scientific developments in the field of specialization

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Department
3. Course title/code	Arabic Language NTU103
4. Programme (s) to which it contributes	Medical Laboratory Technologist Diploma
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical) * Discussions and reports
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Enabling the student to read correctly.

2- Enabling the student to write correctly and use punctuation marks.

3- The student should acquire the ability to use the Arabic language correctly.

4- Introducing the student to the correct Arabic language words, structures and sound methods in an interesting way.

5- Accustom the student to sound and clear expressions of his ideas.

6- Helping the student to understand complex structures and mysterious methods.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A- The student should recognize common mistakes in writing Arabic in order to avoid them

B - The student should recognize the punctuation marks and use them correctly

C - The student should distinguish between the solar lam and the lunar lam, which helps to pronounce it correctly

D - The student differentiates between Dhad and Zaa, and this is what helps him to avoid falling into a spelling error

E - To distinguish between the verb, the noun and the letter, as this is what his Arabic speech is

based on. F- He must be able to write the hamza in its correct position correctly.
B - The skills objectives of the course. B1 – Providing the student with a linguistic wealth that makes him more able to correctly express what he wants. B2- Correcting the student's tongue and preventing it from error
Teaching and learning methods
((Theoretical lectures / listening lectures / conversation lectures / interactive lectures / research in libraries and the Internet on specific topics)).
Evaluation methods
((Oral tests / written tests / weekly reports / daily attendance / participation and interaction in lectures / semester and final exams))
C- Emotional and value goals C1- Thinking, activation and organization development C2- Working to make the student's imagination fertile imagination by highlighting the aesthetics of the language and thus enabling him to express the essence of the soul in a proper way.
Teaching and learning methods
((Theoretical lectures / seminars / conducting debates between students / making reports))
Evaluation methods
((Oral Tests / Written Tests / Observation / Student Cumulative Record))
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- The ability to develop and develop his expressive skills such as poetry and story. D2- The ability to communicate with the outside world properly.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	Introduction to linguistic errors – Taa Al-Marbouta and Al-Taa Al-Maktaba	1. Identify the types of linguistic errors. 2. Differentiate between open Taa and Taa tethered	Discussion method, lecture method	Oral test
2	2	Rules for writing the elongated and compartment thousand – solar and lunar letters	1. Differentiate between the writing of the extended thousand and the compartment and the positions of the writing of the two thousand	Discussion method, lecture method	Oral test

			2. Differentiate between solar letters and lunar letters		
3	2	Al-Daad and Al-Zaa	Differentiate between Dhad and Z	Discussion method, lecture method	Oral test
4	2	Hamza writing	Enable the student to write the hamza correctly	Discussion method, lecture method	Oral test
5	2	Punctuation	Recognize punctuation and write it in the correct location	Discussion method, lecture method	Oral test
6	2	Noun and verb and differentiate between them	1.Recognize the noun and verb and indicate the sign of each 2. Differentiate between noun and verb 3. Indication of the types of verb 4. Differentiate between types of verbs	Discussion method, lecture method	Oral test
7	2	Effects	identify the types of effects and differentiate between them	Discussion method, lecture method	Oral test
8	2	Number	Enable the student to write numbers correctly	Discussion method, lecture method	Oral test
9	2	Applications of common linguistic errors	Recognize and avoid common language errors	Discussion method, lecture method	Oral test
10	2	Applications of common linguistic errors	Recognize and avoid common language errors	Discussion method, lecture method	Oral test
11	2	Noon and Tanween meanings of prepositions	1. Differentiate between Nun and Tanween 2.Recognize the meanings of prepositions	Discussion method, lecture method	Oral test

12	2	Formal aspects of administrative discourse	Identify the formal aspects of administrative discourse	Discussion method, lecture method	Oral test
13	2	The language of administrative discourse	Recognize the language of administrative discourse	Discussion method, lecture method	Oral test
14	2	The language of administrative discourse	Recognize the language of administrative discourse	Discussion method, lecture method	Oral test
15	2	Samples of administrative correspondence	Identify samples of administrative correspondence	Discussion method, lecture method	Oral test

12.Infrastructure	
Required reading:	Textbooks: General Arabic Language Binding for Technical Universities by (Dr. Safaa Kazem Makki and Dr. Lama Muhammad Younis
Main references (sources)	1- Clear dictation: Abdul Majeed Al-Nuaimi, Daham Al-Kayyal, Dar Al-Mutanabbi Library, Baghdad, 6th edition, 1987 AD. 2- Lessons in language, grammar and spelling for state employees: Ismail Hammoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd edition, 1984. 3- Arabic language for the third intermediate grade: Fatima Nazem Al-Attabi, et al., 1st edition, 2018. 4 - General Arabic language for sections other than specialization: Abdul Qadir Hassan Amin and others, Ministry of Higher Education and Scientific Research, 2nd Edition, 2000. 5- Inspired by Arabic literature: Haval Muhammad Amin, Al-Saadoun Press, Baghdad.
Electronic references, Internet sites...	World Wide Web

13.Course development plan
Correcting the linguistic errors that occurred in the manual to be taught and trying to add a definition to some of the terms contained in the fascicle, especially since the

Arabic language fascicle was prepared for non-specialists in the Arabic language, and this leads to making the prescribed vocabulary more accurate and clear.

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical Tactical lap. Techniques Department
3. Course title/code	Physical activity NTU104
4. Programme (s) to which it contributes	Medical Laboratory Technologist Diploma
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Sports discussions and activities
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	6 / 12 / 2025
9. **Aims of the Course** 1- The student should be able to identify the most important types of sports and what are the laws and skills of some sports 2- Identify the motor mechanism of the human body and what are the common injuries that occur in the human body. 3. Perform his duties at the workplace for professional motives.	
10. Course outcomes and teaching, learning and evaluation methods	
A.Cognitive objectives A1- The student should be able to identify the most important types of sports and what are the laws and skills of some sports	
B - The skills objectives of the course.	

B1- Identify the motor mechanism of the human body and what are the common injuries that occur in the human body.
Teaching and learning methods
((Theoretical lectures / practical lectures / field visits / solving examples / seminars))
Evaluation methods
((Oral exams / written tests / weekly reports / daily attendance / semester and final exams))
C- Emotional and value goals C1- Perform his duties at the workplace for professional motives.
Teaching and learning methods
((Theoretical lectures / practical lectures / field visits / solving examples / seminars))
Evaluation methods
((Oral Tests / Written Tests / Observation / Student Cumulative Record))
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Improve their discussion skills. D2- Raising their research perceptions and transferring the student from the stage of teaching to learning.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	Sport definition, importance and types	Knowledge and practical application	theoretical and practical	Tests & Reports
2	2	The mechanism of movement of the human body	Knowledge and practical application	theoretical and practical	Tests & Reports
3	2	Common sports injuries	Knowledge and practical application	theoretical and practical	Tests & Reports
4	2	Basic skills of the game of basketball	Knowledge and practical application	theoretical and practical	Tests & Reports
5	2	International Basketball Law	Knowledge and practical application	theoretical and practical	Tests & Reports
6	2	Basic skills of table tennis and its international law	Knowledge and practical application	theoretical and practical	Tests & Reports
7	2	Basic skills of volleyball and its international law	Knowledge and practical application	theoretical and practical	Tests & Reports
8	2	Swimming sport	Knowledge and practical application	theoretical and practical	Tests & Reports
9	2	Basic skills of tennis and its international law	Knowledge and practical application	theoretical and practical	Tests & Reports
10	2	Basic skills of handball	Knowledge and practical application	theoretical and practical	Tests & Reports

11	2	International Handball Law	Knowledge and practical application	theoretical and practical	Tests & Reports
12	2	Arena and field games (types, international law of the game)	Knowledge and practical application	theoretical and practical	Tests & Reports
13	2	Basic Football Skills	Knowledge and practical application	theoretical and practical	Tests & Reports
14	2	Management of sports competitions and competitions	Knowledge and practical application	theoretical and practical	Tests & Reports
15	2	Sports Laws and Legislations	Knowledge and practical application	theoretical and practical	Tests & Reports

12.Infrastructure	
Required reading:	Available in the free department and library of the institute
Main references (sources)	Available in the free department and library of the institute
Electronic references, Internet sites...	Internet

13.Course development plan
1- Developing curricula adapted to the labor market 2- Holding seminars and scientific conferences aimed at updating the curricula 3- Follow-up scientific developments in the field of specialization

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Medical Technical Institute, Mosul / Department of Medical Laboratory Technique
3. Course title/code	PHYSIOLOGY (TIMM 106)
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45 h
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** The students must know the importance of human physiology and functions of all human body system.	
10. Course outcomes and teaching, learning and evaluation methods	
A.Cognitive objectives A1- know Terms of human body. A2- The students learn Functions of each system.	

A3- Estimation of lung volume, body temperature, and ECG for patients and healthy.
B - The skills objectives of the course. B1 - Training students to measure blood pressure and pulse B2 - Training students in the measurement of bleeding time and clotting time. B3 - The student is able to take some tests in emergency cases B4- Training students to measure hemoglobin and blood groups.
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- The student can distinguish the physiological changes of the body C2- Knowledge the types of anemia and its causes C3- Learn how to do ECG and ESR.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method

1	3	Body systems. Its functions, Blood smear. Blood, Plasma : their functions.	Lecture, discussion,	3	Test
2	3	Anemia deficiency of iron, and Vit., B12, Blood cells, types and function.	Lecture, discussions	3	test
3	3	Blood clotting. its factors and sites. Plasma proteins. its functions.	Lecture, discussion,	3	test
4	3	Cardiovascular system, blood grouping. Erythroblastosis. Heart muscles, physiology of the heart.	Lecture, discussion,	3	Test
5	3	Blood circulation, blood to body tissues. Blood pressure, pulse	Lecture, discussion,	3	test
6	3	Factors affecting heart rate. Respiratory system, structural and function.	Lecture, discussion	3	test
7	3	Lung volume, estimation. Spirometer. Hypoxia. Anoxia. its types	Lecture, discussion,	3	test
8	3	Effects of hypoxia respiratory centers. Central and peripheral nervous system	Lecture, discussion,	3	test
9	3	Nerve. its function & physiology. Autonomic nervous system.	Lecture, discussion,	3	test
10	3	Central nervous system. Cerebellum function and body balance.	Lecture, discussion,	3	test
11	3	Physiology of digestion. steps of digestion. Accessory organs of digestive system. pancreas function.	Lecture, discussion,	3	Test
12	3	Digestive system. function of each part. Non digestive function of the pancreas, diabetes mellitus.	Lecture, discussion,	3	test
13	3	Urinary tract system function of each part. Urination.	Lecture, discussion,	3	test
14	3	Endocrine system, glands, Function. Function of endocrine hormones	Lecture, discussion,	3	test
15	3	Temperature regulation. Hypothermia. Frostbite Hyperthermia, Heat stroke.	Lecture, discussion,	3	Test

12.Infrastructure

Required reading:	
Main references (sources)	**1- G. pocock, C. D. Richards and D. A. Richards, *Human Physiology.* United kingdom: Oxford university press, 2013**
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	

13.Course development plan
1- Access to modern scientific literature 2- Participation in relevant scientific conferences 3- The teaching and training staff is partially devoted to applying and working in hospitals 4- Hosting specialized professors 5- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical tactical lab.Techniques Department
3. Course title/code	Anatomy / TIMM 107
4. Program (s) to which it contributes	Technical Diploma in medical technical lab.
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Modules
7. Number of hours tuition (total)	60

8. Date of production/revision of this specification	12/ 6 / 2025

9. **Aims of the Course**

The student will be able to:

- Identify the human body's systems.
- Identify the relationship between devices.

10. Course outcomes and teaching, learning and evaluation methods

A. Cognitive objectives:

A1. Identify the organs of each system of the human body.

A2. Identify the location of each organ in the human body.

B - Skills objectives:

- Training students on the general anatomical positions of the human body

C- Emotional and Value-Based objectives:

- Respecting the patient's sanctity, customs and traditions.

D - General and qualifying skills:

D1- Field visits to gain experience from others.

D2- Access to scientific developments in the field of specialization (educational videos).

D3- Practical training in hospitals.

Teaching and learning methods

Traditional lecture, Writing reports, Seminar conduct, Practical training in the laboratory, Practical training in the hospital, and End of the course training.

Evaluation methods

Daily written and oral tests, Applied tests, Seminars, Semester and final exams, Commitments to assignments, Attendance and commitment, Feedback (Linking the current topic to the previous topic), Self-evaluation, Reports on scientific developments in the field of specialization, Asking analytical and deductive questions.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Anatomical Directions: Explain all directions of the human body. Surface anatomy of the heart: Describe the position of the heart according to the chest wall and the number of the rib .	Lecture, discussion, presentation of videos	test

2	4	Surface Anatomy of lungs: Describe the position of the lungs according to the chest wall and the number of the rib. Anatomy of the abdomen surface: Drawing the regions of the abdominal surface according to the horizontally & vertically lines .	Lecture, discussion, presentation of videos	test
3	4	Anatomy of stomach: Demonstration the relation of the stomach to the other organs to the abdomen. Anatomy of the liver & spleen: Explain the regions of liver & spleen according to the sur face anatomy of abdomen .	Lecture, discussion, presentation of videos	test
4	4	Anatomy of Intestine: Demonstration the relation of the Intestine to the other organs to the abdomen. Anatomy of the Appendix: Determine the region of the appendix at the right iliac region .	Lecture, discussion, presentation of videos, Display models	Test
5	4	Anatomy of the gall bladder: Determine the region of gall bladder at the right sub – costal region. Define the region of the uterus at the supra – pubic region .	Lecture, discussion, presentation of videos, Display models	practical test
6	4	Anatomy of the skeleton: Describe the center skeleton: Skull – vertebral column & the peripheral. Bones of the shoulder: Show the bones of the shoulder on the skeleton which are the scapula and the clavicle.	Lecture, discussion, presentation videos, Display models	practical test
7	4	Bones of the arm: Show the bones of the arm (Humarus). Bones of the forearm: Show the bones of Ulna and Radius.	Lecture, discussion, presentation videos, Display models	practical test
8	4	Bones of the hand: Demonstrate the bones of the hand: (carpal bones and meta carpal and phalangus). Bones of the pelvis: Define the bones of the pelvis which are: (Iliac and Ischemic and sacrum).	Lecture, discussion, presentation videos, Display models	practical test

9	4	Bones of the thigh: Demonstrate of the skeleton the femur bone with the lower and upper ends. Bones of the leg: Show the bones which are: (Tibia & fibula), and extration to the femur and the foot .	Lecture, discussion, presentation videos, Display models	practical test
10	4	Bones of the foot: Describe the bones which are :(Tarsal & metarsal & phalanges). Bones of the skull: Name the numbers of the bones on all at surfaces of the skull .	Lecture, discussion, presentation videos, Display models	practical test
11	4	Bones of vertebral column: Show the student the types of the vertebrae column and the numbers. Muscle of the shoulder: Show them on the model all the muscles of the shoulder.	Lecture, discussion, presentation videos, Display models	practical test
12	4	Anatomy of the chest wall: Give the types and numbers of the ribs and explain the sternum. Muscles of the chest & abdomen: Give the name of the muscles of the chest wall and abdominal wall.	Lecture, discussion, presentation videos, Display models	practical test
13	4	Muscles of the back & gluteal region: Show the student muscles of the back and gluteal muscles. Anatomy of the digestive system: Show the organs of the digestive system .	Lecture, discussion, presentation videos, Display models	practical test
14	4	Anatomy of the cardio-muscular system: Show them the model of the organs which is the heart and big vessels. Respiratory system: Demonstrate the lungs and bronchus and bronchi..	Lecture, discussion, presentation videos, Display models	practical test
15	4	The uro-genetal system: Show the kidney and urinary bladder with exaltation to the uterus & prostate. The central nervous system: Describe the brain – cerebellum – medulla oblongata and the spinal cord.	Lecture, discussion, presentation videos, Display models	practical test

12.Infrastructure	
Required reading:	**Anatomy**
Main references (sources)	**1- مبادئ علم التشريح لطلبة معاهد المهن الصحية، الدكتور عبد الرحمن محمود، الرحيم / وزارة الصحة 1983**
Recommended books and references (scientific journals, reports,...)	**Atlas of anatomy (Grantes) / 1998. Kingham anatomy – Oxford – London / 1987 .**
B - Electronic references, Internet sites...	

13.Course development plan
Access to modern scientific literature through: 6- Participation in relevant scientific conferences 7- The teaching and training staff is partially devoted to applying and working in hospitals 8- Hosting specialized professors 9- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Radiology Techniques Department
3. Course title/code	Safety of laboratories and workshops TIMM 108

4. Programme (s) to which it contributes	Technical Diploma in medical technical lab.
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

Aim of subject

General aims:

Knowledge of public security and safety procedures.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- General safety precautions in laboratories.

A2- Knowledge of safety papers for chemicals and the signals that must be respected in laboratories bonds .

A3- Identify the types of fires and means of extinguishing them.

A4- first aid

B - The skills objectives of the course.

B1 – Know the precautions when dealing with chemicals, tools and laboratory equipment.

B2 - Know the safety precautions when storing and preserving chemicals.

B3 - Handling firefighting equipment.

B4 - Safety precautions after completing work in the laboratory.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals

C1- Use and clean laboratory equipment.

C2- The meaning of the signs that must be respected in laboratories and workshops.

C3- The meaning of occupational health and its requirements.

C4- Able to perform first aid.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	Safety in laboratories and workshops.	Lecture	2	Test
2	2	Laboratory and types of laboratories	Lecture	2	test
3	2	General safety precautions in chemical laboratories	Lecture	2	test
4	2	Personal protection tools	Lecture	2	Test
5	2	The importance of laboratories and precautions when dealing with	Lecture	2	test

		chemicals, tools, and laboratory equipment			
6	2	Safety papers for chemicals and signals that must be respected in laboratories	Lecture	2	test
7	2	Occupational health	Lecture	2	test
8	2	Safety precautions when storing and preserving chemicals	Lecture	2	test
9	2	Types and shapes of warehouses, risks and injuries in chemical laboratories	Lecture	2	test
10	2	Types of fires and means of extinguishing them	Lecture	2	test
11	2	Fire classification	Lecture	2	Test
12	2	Fire extinguishing equipment	Lecture	2	test
13	2	first aid	Lecture	2	test
14	2	Safety precautions after completing work in the laboratory	Lecture	2	test
15	2	A set of comprehensive questions for the subject	Lecture	2	Test

12.Infrastructure

Required reading:	
Main references (sources)	1. ادارة الامن والسلامة في المعامل والمختبرات - د. ليلى عبدالله الخطيب الرياض 2018 2. السلامة في المختبرات المملكة العربية السعودية - المؤسسة الكيميائية - العامة للتعليم الفنى والتدريب المهنى – 2009 3. معايير ومتطلبات السلامة والجودة في المختبرات - احمد السروري - 2014
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	https://www.noor-book.com/tag/%D9%82%D9%88%D8%A7%D8%B9%D8%AF-%D8%A7%D9%84%D8%B3%D9%84%D8%A7%D9%85%D8%A9-%D9%81%D9%8A-%D8%A7%D9%84%D9%85%D8%AE%D8%AA%D8%A8%D8%B1#google_vignette

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/Department	Hawija technical institute/ medical technical lab. Department
3. Course title/code	Medical Terminology) 112
4. Programme (s) to which it contributes	Technical Diploma in medical technical lab.
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practic * Scientific discussions, seminars, other activities
6. Semester/Year	Courses
7.Number of study hour (total)	30 hour
8. Date of production/revision of this specification	12/ 6/ 2025

9.**Aims of the Course**

1- Teaching and training the student on how to pronounce letters correctly.
2- Teaching and training the student on how to communicate with others.
3- Teaching and training the student to know the tenses and their structure.
4- Teaching and training the student to know how to make a question and a negation.
5- Teaching and training the student on how to use punctuation and definition tools.
6- Teaching and training the student on how to know information about himself and others as well.

10. Course outcomes and teaching, learning and evaluation methods

A. Cognitive objectives

A1- Identify tenses (present simple, past simple, and future simple) .
A2- Learn how to pronounce correctly .
A3- Learn how to provide a personal biography for an individual.
A4- Focus on grammar.
A5- Clear vocabulary approach.
A6- Work on integrated skills.

B - The skills objectives of the course.

B1- Training in identifying correct sentences from incorrect sentences and explaining the reason.
B2 - Training students on how to tell the time.
B3 - Training on some countries, nationalities, and languages.
B4 - Training on introduction, getting to know each other, and bidding farewell.

Teaching and learning methods

Traditional lecture, writing reports, conducting seminars, systematic training in the classroom, and the use of technology in modern education, self-learning, feedback, deductive and analytical thinking questions, systematic training in laboratories.

Evaluation methods Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, and ask analytical and deductive questions.
C- Emotional and value goals C1- Training on how to deal with incorrect sentences. C2- Training on how to improve your skills to use the English language more effectively and perform well in your studies. C3- Training on how to proceed at work and communicate in English in your free time. . C4- Training on how to deal with native speakers. C5- Training on how to benefit from acquired skills. C6- Instilling a love of knowledge in the student by encouraging him to learn.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1-Encouraging reading of texts in English. D2- Access to scientific developments in the field of specialization (educational videos).

11. Course Structure					
Week	**Hours**	**Required learning outcomes**	**Unit/Module or Topic Title**	**Teaching Method**	**Assessment Method**
1	2	Introducing students to the importance of the medical terminology course and its nature	Introduction To Medical Terminology	Lecture, discussion, pairs of students to conduct dialogues, representation by drawing on the blackboard, PowerPoint	Oral Test
2	2	Identify the structure of the medical term and its basic parts	Basic Word Structure	Lecture, discussion, video presentation, and PowerPoint	Oral Test
3	2	. Identify the root word of the medical term	Root	Lecture, discussion,	Oral Test

				PowerPoint presentation, acting pairs	
4	2	Identify the syllables that are added to the beginnings of a medical term	The Prefix	Lecture, discussion, video presentation, and pair acting	Oral and Practical Test
5	2	Identify the syllables that are added to the ends of a medical term	The Suffix	Lecture, discussion, video and photo presentation	Practical and Oral Test
6	2	Learn how to connect medical terms	Rules For Combining Vowels	Lecture, discussion, video and photo presentation	Practical Test
7	2	Identify the types of association related to medical terms	Combining Form	Lecture, discussion, slide show	Practical and Oral Test
8	2	Learn about the most important medical terms and concepts of pathology	Medical terminology and pathology	Lecture, discussion, video and photo presentation	Practical Test
9	2	Identify the most important medical terms related to the heart, circulatory, and nervous systems, its component parts, and the most important common diseases	Terms of Cardiovascular system Terms of Nervous system	Lecture, discussion, showing videos and photo	Practical Test
10	2	Identify the most important medical terms related to the digestive and urinary systems, their component parts, and the most common diseases	Terms of Digestive system Urinary system Terms of	Lecture, discussion, presentation of videos and photos	Practical Test
11	2	Identify the most important medical terms related to the blood and lymphatic system, its component parts, and the most important common diseases	Terms of Blood and Lymphatic system	Lecture, discussion, presentation of videos and photos	Practical Test
12	2	Identify the most important medical terms related to the respiratory system, its	Terms of Respiratory system	Lecture, discussion, presentation of videos and photos	Practical Test

		component parts, and the most common diseases			
13	2	Identify the most important medical terms related to teeth, face and jaws	Terms Of Teeth And Oral Facial Regio	Lecture, discussion, presentation of videos and photos	Practical Test
14	2	Identify the most important medical terms related to conditions and trends	Positional and directional terms	Lecture, discussion, presentation of radiological videos and films	Practical Test
15	2	Identify the most important medical terms related to the musculoskeletal system, its component parts, and the most common diseases	Musculoskeletal System	Lecture, discussion, presentation of videos and photos	Practical and Oral Test

12.Infrastructure	
Main references (sources)	
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Radiology Techniques Department
3. Course title/code	Analytical chemistry MLT115
4. Programme (s) to which it contributes	دبلوم تقني مختبرات طبية
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

Aim of subject

General aims:

It give an general idea about compound and able to student to make different experiment and chemical reaction .

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Identify the Atom, Element, Isotopes.

A2- Identify the Matter, Chemical bonds .

A3- Identifying the Express of concentration.

B - The skills objectives of the course.

B1 – How to use and clean laboratory equipment.

B2 - How to act with different chemical reagents.

B3 - How to prepare different concentration solution.

B4 - How to use the laboratory instrument.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- Use and clean laboratory equipment. C2- Can able to act with different chemical reagents. C3- Can able to prepare different concentration solution. C4- Can able to use the laboratory instrument.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method

1	3	Atom, Element, Isotopes, Radioisotopes in medicine . Safety instructions .	Lecture, discussion,	3	Test
2	3	Radioactivity, Radio isomers pollution, Debroglie equation . laboratory equipments .	Lecture, discussions	3	test
3	3	Matter, Chemical bonds . Reaction of cation .	Lecture, discussion,	3	test
4	3	Errors and statistics, Classification of errors . Reaction of anion .	Lecture, discussion,	3	Test
5	3	Express of concentration , Formality , Molarity, Normality . Weighting .	Lecture, discussion,	3	test
6	3	P – functions, Density and specific Gravity, Solution – Diluent Volume Ratios . percentage composition .	Lecture, discussion	3	test
7	3	Chemical Equilibrium . Molarity .	Lecture, discussion,	3	test
8	3	Examples of Common Types of Equilibrium – Constant Expressions . Normality .	Lecture, discussion,	3	test
9	3	Buffer Solutions .	Lecture, discussion,	3	test

		dilution low .			
10	3	Capacity, Analytical chemistry. Buffer Solutions .	Lecture, discussion,	3	test
11	3	Volumetric Analysis. Volumetric Analysis .	Lecture, discussion,	3	Test
12	3	Standard solution . Neutralization .	Lecture, discussion,	3	test
13	3	Theory of indicator . oxidation reaction .	Lecture, discussion,	3	test
14	3	Spectrophotometric Method . Precipitation .	Lecture, discussion,	3	test
15	3	A comprehensive set of questions . Spectrophotometric .	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	4. Fundamentals of Analytical Chemistry - Douglas A.Skoog – Donald M.West - 3rd Edition,1976 5. أ.د. محمد – أسس الكيمياء التحليلية جمهورية مصر العربية – مجدي عبدالله واصل 6. المختصر في حل مسائل الكيمياء التحليلية 2016 - أ.د. منذر سليم عبد اللطيف - الكمية
Recommended books and references (scientific journals, reports,...)	

B - Electronic references, Internet sites...	https://books-library.net/c-analytical-chemistry-best-download#google_vignette

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Medical Technical Institute, Mosul / Department of Medical Laboratory Technique
3. Course title/code	**Histology Techniques** (MLT 113)
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practic * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45 h
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** Students can prepare permanent slides for different body organs.	
10. Course outcomes and teaching, learning and evaluation methods	
A.Cognitive objectives A1- know permanent stained tissues slides and body fluid smears. A2- The students learn the preparing all needed chemical solution. A3- learn fix and preserve tissue specimen.	
B - The skills objectives of the course. B1 - Training students on ways to prepare a tissue slide for different body organs. B2 - Training students in appropriate staining of the tissue slide. B3 - Training students on how to diagnose pathological changes in the tissue as a result of	

being affected by different diseases. B4- Training students to preserve and fixed clinical models.
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- The student can distinguish the pathological changes in the tissue. C2- Explaining and understanding the reason for taking a sample and not another. C3- Knowledge the types of stains used to prepare the tissue slide.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method

1	3	Definition of some terminology that deals with histology, cytology.... etc. Sample collection, biopsy, autopsy	Lecture, discussion,	3	Test
2	3	Steps of preparing tissue for study, fixation fixatives.	Lecture, discussions	3	test
3	3	Routine fixatives and special fixatives	Lecture, discussion,	3	test
4	3	Washing Routine solution, time	Lecture, discussion,	3	Test
5	3	Dehydration, dehydrants. Clearing agents	Lecture, discussion,	3	test
6	3	Infiltration, types of waxes blocking and trimming	Lecture, discussion	3	test
7	3	Microtomes, Sectioning.	Lecture, discussion,	3	test
8	3	Mounting, Adhesives.	Lecture, discussion,	3	test
9	3	Staining, classification of stains.	Lecture, discussion,	3	test
10	3	Staining section and theories	Lecture, discussion,	3	test
11	3	Methods of staining	Lecture, discussion,	3	Test
12	3	types of stains, preparation of stain and oxidation of some stains	Lecture, discussion,	3	test
13	3	stains solvents, factors affecting staining, storage of stains, how to chose stain	Lecture, discussion,	3	test
14	3	Decalcification, bone tissue.	Lecture, discussion,	3	test
15	3	Tissue slide, Freezing microtome.	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	

Main references (sources)	2- Theory and practice of histological technique by Bancroft
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical Mechnical lab. Techniques Department
3. Course title/code	Medical lab Instrument MLT114
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** **1- Introducing the student to the types of devices.** **2- Teaching and training students on laboratory equipment.** **3- Teaching and training students on how to use medical devices and distinguish between them.**	
10. Course outcomes and teaching, learning and evaluation methods	
A- Cognitive objectives A1- Identify laboratory equipment.	

A2- Learn how to distinguish between types of laboratory equipment. A3- Identify laboratory equipment and how to deal with them.
B - The skills objectives of the course. B1 - Training on operating the equipment. B2 - Training students on how to distinguish between them. B3 - Training students on how to use it correctly. B4 - Training on the skill of dealing with it and maintaining it.
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- That the student should be able to know how to deal with laboratory equipment. C2- Understanding the similarities, differences, and comparison between different devices. C3-Explaining the mechanisms of performing the job C4- Accurate knowledge of the devices and their locations. C5- Explaining and understanding the reason for dealing with it in the correct manner and preserving it and not anything else.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability

and personal development).
D1- Field visits to gain experience from others.
D2- Access to scientific developments in the field of specialization (educational videos).
D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	PHOTOMETRY Introduction ,Light and wave length ,Beer lamberts Law , types of photometers ,main parts , filters ,prisms and diffraction gratings ,principle of operation , operation and maintenance .	Lecture, discussion,	3	Test
2	3	FLAME PHOTOMETRY Introduction, Uses, main parts, types, atomizers, principle of operation, operation and maintenance.	Lecture, discussions	3	test
3	3	MICROSCOPES Uses, main parts, principle of work, kinds, and types of condensers, operation, cleaning, service and maintenance.	Lecture, discussion,	3	test
4	3	BALANCES Uses, types of balances, main part, principle of operation, service and maintenance.	Lecture, discussion,	3	Test
5	3	EXAMINATION	Lecture, discussion,	3	test
6	3	ATOMIC ABSORPTION SPECTROPHOTOMETERY Introduction, uses, types, main parts, principle of operation, and maintenance.	Lecture, discussion	3	test
7	3	CENTRIFUGES Uses, types, main parts, principle of operation , and maintenance.	Lecture, discussion,	3	test

8	3	AUTOCLAVES Introduction ,uses , types, main parts , principle of operation , sterilization, operation and maintenance	Lecture, discussion,	3	test
9	3	PH METERS Uses, types, main parts, electrodes, principle of operation, and maintenance.	Lecture, discussion,	3	test
10	3	MICROTOMES Uses, types, main parts, sharpeners, principle of operation, and maintenance.	Lecture, discussion,	3	test
11	3	ELECTROPHORESIS Uses, types, main parts, principle of operation , and maintenance.	Lecture, discussion,	3	Test
12	3	HEATING INSTRUMENTS (WATER BATHS ,OVEN & INCUBATION) Uses, types, main parts thermostats, principle of operation, and maintenance.	Lecture, discussion,	3	test
13	3	WATER PURIFICATION (DISTILLATORS & DEAIONIZERS) Distillators, deionizers, uses, main parts, operation and maintenance.	Lecture, discussion,	3	test
14	3	AUTOANALYZERS Introduction, uses, types, main parts, principle of operation , and maintenance.	Lecture, discussion,	3	test
15	3	EXAMINATION	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	
Recommended books and references (scientific journals, reports,...)	كتاب مبادئ الاجهزة الطبية الأستاذ المساعد / احمد محمد وحيد
B - Electronic references, Internet sites...	Refernce :- 1- Microscopy and Microtechnique R. Maimuth 2019. 2- Biological Centrifugation Dr. John Graham 2020

13.Course development plan

- Access to modern scientific literature
- Participation in relevant scientific conferences
- The teaching and training staff is partially devoted to applying and
- working in hospitals Hosting specialized professors
- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Histology MLT118
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 1- Teaching and training how to use microscope. 2- Teaching and training how to check slides types. 3- Teaching and training the different between types of tissues.	

10. Course outcomes and teaching, learning and evaluation methods
A.Cognitive objectives A1- Identify the structure of organs. A2- Identify the different between types of tissue in organs. A3- Identifying the how to take samples from patient .
B - The skills objectives of the course. B1 - Training in check slides. B2 - Training students on how different normal tissues. B3 - Training the how to use micro scope . B4 - Training on dealing with samples .
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- Training on how to combine structure and function. C2- Training on similarity and different in organism. C3- Training on understand functions. C4- Training on organs function and location. C5- Training on why taken samples not another.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Microscope Shape of cell	Lecture, discussion,	3	Test
2	3	Epithelial tissue –simple epith. T.classification of tissue type.	Lecture, discussions	3	test
3	3	General function of epith. T.	Lecture, discussion,	3	test
4	3	Classification of epi. Tissue	Lecture, discussion,	3	Test
5	3	Shape of cell,special features of epi	Lecture, discussion,	3	test
6	3	Connective tissue,classification of conn.t	Lecture, discussion	3	test
7	3	Cell of connective tissue	Lecture, discussion,	3	test
8	3	Structural elements of connective	Lecture, discussion,	3	test
9	3	Connective tissue proper	Lecture, discussion,	3	test
10	3	Dense connective tissue.reglar ,irregular	Lecture, discussion,	3	test
11	3	Cartilage,types of cartilage.	Lecture, discussion,	3	Test
12	3	Bone tissue ,compact bone- spongy bon	Lecture, discussion,	3	test
13	3	Blood ,lymph	Lecture, discussion,	3	test
14	3	Muscular tissue (cardiac muscle ,skeletal muscle ,smooth muscle	Lecture, discussion,	3	test
15	3	Nervous tissue ,classification of neurons	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	1.علم الانسجة د. كواكب عبد القادر جامعة بغداد 1- Diforis text and atlas hisology

Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	**Histology1 Author: Gordana Sendić, MD • Reviewer: Nicola McLaren, MSc Last reviewed: October 30, 2023 2 Microsc Res Tech. Author manuscript; available in PMC 2021 May 7.Published in final edited form .**

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Foundations of Nursing MLT 117
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester

7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- 1- Teaching and training students on how to take samples.
2- Teaching and training students to measure blood pressure.
3- Teaching and training students to deal with patients of different age groups...

10. Course outcomes and teaching, learning and evaluation methods

A- Cognitive objectives
A1- Identify the basics of nursing.
A2- Learn how to examine patients and deal with emergency situations.
A3- Learn how to draw blood, measure pressure, measure respiratory rate and pulse.

B - The skills objectives of the course.
B1 - Training in drawing blood.
B2 - Training students on how to measure blood pressure.
B3 - Training students on how to measure pulse and breathing rates.
B4 - Training in the skill of dealing with patients.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals
A1- That the student be able to provide basic nursing and personal care to patients who need this care
C2-Work under the supervision and direction of a registered nurse or other health care professional
C3- That the student be able to provide basic personal care to patients

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.

D - Transferable general and qualifying skills (other skills related to employability and personal development).
D1- Field visits to gain experience from others.

D2- Access to scientific developments in the field of specialization (educational videos).
D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Medical examination	Lecture, discussion,	3	Test
2	3	Vital signs, temperature measurement,	Lecture, discussions	3	Test
3	3	. Pulse, definition, factors that effecting pulse, measurement of pulse	Lecture, discussion,	3	Test
4	3	Respiration, definition, factors that effecting respiration, measurement of respiration	Lecture, discussion,	3	Test
5	3	Blood pressure, definition, factor the effecting blood pressure, hyper and hypotension, measurement of blood pressure	Lecture, discussion,	3	Test
6	3	Health care, definition, factors effecting health care	Lecture, discussion	3	Test
7	3	Factors that effects the health of worker in laboratories, natural factors, infectious diseases	Lecture, discussion,	3	Test
8	3	Chemical factors- disease	Lecture, discussion,	3	Test
9	3	Psychological factors-diseases	Lecture, discussion,	3	Test
10	3	Biological factors- types-their effects on workers in Lab.-diseases	Lecture, discussion,	3	Test

11	3	Review for bio-vital markers measurement	Lecture, discussion,	3	Test
12	3	Disinfection and sterilization methods	Lecture, discussion,	3	Test
13	3	Methods of drugs intake and needle glaucoma	Lecture, discussion,	3	Test
14	3	Samples collection from patients	Lecture, discussion,	3	Test
15	3	Medical examination	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	Concepts for Nursing Practice E-Book Jean Foret Giddens

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab.

	Techniques Department
3. Course title/code	Organic Chemistry MLT115
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	14 / 1 / 2025

9. **Aims of the Course**

1- Teaching and training students on how to prepare chemical compounds.
2- Teaching and training students to use chemicals safely and participate in developing products and protecting the environment and health from harmful chemicals.
3- Teaching and training students on the types of chemicals and how to deal with them.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Identify the structure of organic chemicals.
A2- Learn how to distinguish between types of organic chemicals.
A3- Learn how to manufacture, create and present new products to society, as they are used in food, cosmetics, pharmaceutical, fuel, petroleum and plastic industries

B - The skills objectives of the course.

B1 - Training in preparing organic chemicals.
B2 - Training students on how to distinguish between types of chemicals.
B3 - Training students on occupational safety procedures in the laboratory.
B4 - Training on first aid in the event of any accidents occurring inside the laboratory.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals

C1- That the student be able to prepare some solutions.
C2-Distinguishing between different chemicals
C3- Use scientific tools and equipment and handle them well
C4- Detection of important chemical substances and compounds.

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Introduction to organic chemistry, organic compounds present in nature, pollution with organic compounds	Lecture, discussion,	3	Test
2	3	Hybridization methane, Ethylene ,Acetylene,	Lecture, discussions	3	test
3	3	Hydrocarbons Classification alkane, alkenes, benzene example, Reaction ,Nomenclature , properties	Lecture, discussion,	3	test
4	3	Alkynes, Example , Nomenclature , Properties , Reaction	Lecture, discussion,	3	Test
5	3	Aromatic compound , Names, Polycyclic aromatic compound , Electrophilic aromatic substitutions	Lecture, discussion,	3	test
6	3	Phenols , Synthesis ,Reaction , Properties	Lecture, discussion	3	test
7	3	Alcohols , Classification and properties , Reactions	Lecture, discussion,	3	test
8	3	Aldehyde's , Classification and properties , Reactions	Lecture, discussion,	3	test
9	3	Ketones , Classification and properties , Reactions	Lecture, discussion,	3	test
10	3	Carboxylic acid , Classification and properties , Reactions	Lecture, discussion,	3	test
11	3	Ester, Reaction and Properties	Lecture, discussion,	3	Test

12	3	Ether , Nomenclature and properties	Lecture, discussion,	3	test
13	3	I.R. and UV. spectroscopy	Lecture, discussion,	3	test
14	3	Hetero cyclic	Lecture, discussion,	3	test
15	3	Stereochemistry	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	1-Organic chemistry, 6thEd , Morrison & Boyd, Prentice Hall of India, 19/2/2016.
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	**2-Advanced Organic Chemistry. Reactions and Synthesis, Ed4(Part B), Carey F., Sundberg R. , Kluwer 2000.** **3-Organic chemistry, Ed5 , Carey F.A, MGH 2004.**

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical Laporatory Techniques Department
3. Course title/code	Laboratory techniques MLT116
4. Programme (s) to which it contributes	Diploma in medical laboratory technology
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12/6/2025

9. **Aims of the Course**

1- Identify the basic principles of laboratory tools, devices, and materials
2- Id2- Identify the principles of microbiology
3- Id3- Identify the principles of bacteriology
4- Id4- Identify the principles of hematology
5- Id5- Identify the principles of urine examination
6- Identify the principles of quality control.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Identify methods of sterilizing laboratory equipment and tools
A2- Identify the shapes and types of bacteria and methods of diagnoses
A3- Learn how to obtain samples from the patient and how to deal with them.

B - The skills objectives of the course.

B1 - Training in examining laboratory samples.
B2 - Training students on how to distinguish bacterial species.
B3 - Training students on how to examine urine, stool and sputum samples.
B4 - Training on blood drawing methods.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals

C1- That the student is able to link the theoretical and practical parts.

C2- Understanding the physiology of bacteria and methods of diagnosing them. C3- Interpretation of the results of microscopic examination of urine and discharge samples and the method of writing reports. C4- Knowledge of blood components and anticoagulants C5- Explaining and understanding the reason for taking a sample and not another sample
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Introduction to laboratory techniques & Laporatory safety rules	Lecture, discussion,	3	Test
2	3	Basic microbiological equipment's in laporatory	Lecture, discussions	3	test
3	3	Sterilization & disinfection .	Lecture, discussion,	3	test
4	3	Culture Media	Lecture, discussion,	3	Test
5	3	Methods of bacterial isolation	Lecture, discussion,	3	test
6	3	Studying and describing the characteristics of developing colonies	Lecture, discussion	3	test

7	3	The microscope	Lecture, discussion,	3	test
8	3	Bacterial staining	Lecture, discussion,	3	test
9	3	Methods of collecting and handling laboratory samples	Lecture, discussion,	3	test
10	3	General Stool Examination	Lecture, discussion,	3	test
11	3	General Urine Examination	Lecture, discussion,	3	Test
12	3	Introduction in Hematology	Lecture, discussion,	3	test
13	3	Blood Drawing Methods	Lecture, discussion,	3	test
14	3	Hemoglobin and methods of it's examination	Lecture, discussion,	3	test
15	3	General review and exam	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	2- Jawetz, Melnick & Adelberg's medical microbiology 3- Practical Medical Technology By M.D.A 1986
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	**1- Science daily – Microbiology news.** **2- SGM : Newsdesk, Microbilogy news and podcasts.**

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and

- working in hospitals Hosting specialized professors
- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Medical Technical Institute, Mosul / Department of Medical Laboratory Technique
3. Course title/code	Blood Transfusion (MLT116)
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practic * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45 h
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** identification of blood bank properties.	
10. Course outcomes and teaching, learning and evaluation methods	
A.Cognitive objectives A1- blood typing. A2- doing compatibility test. A3- another test for blood bank.	
B - The skills objectives of the course. B1 - Training students on how to Blood withdrawal. B2 - Training students to determine the blood groups. B3 - Learn how to store blood, its ingredients, coagulants, blood bags, storage effect. B4- The student learns about the laws and rules of blood transfusion, donation and identification of diseases transmitted with the transfusion process.	
Teaching and learning methods	
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.	
Evaluation methods	
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to	

assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- The student can choose the donor and how to Blood withdrawal, and take care of the donor during and after the donation. C2- Knowledge how to perform compatibility test and write reports. C3- Knowledge the types of blood tubes.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Information of blood transfusion	Lecture, discussion,	3	Test
2	3	Blood components, blood collection ,choosing the donor , physiological examination , time of collection.	Lecture, discussions	3	test

3	3	Complete the second week principles.	Lecture, discussion,	3	test
4	3	Blood typing : ABO system , Rh factor , Lewis system.	Lecture, discussion,	3	Test
5	3	Classification of blood typing (long & short)	Lecture, discussion,	3	test
6	3	Direct and indirect coomb's test of blood	Lecture, discussion	3	test
7	3	Process of cross matching test , reporting and record the results.	Lecture, discussion,	3	test
8	3	Roles of blood transfusion , disease of blood	Lecture, discussion,	3	test
9	3	Pregnant care , leukemia of infants	Lecture, discussion,	3	test
10	3	Complete the principles above	Lecture, discussion,	3	test
11	3	Blood splitting , methods of using and dividing.	Lecture, discussion,	3	Test
12	3	Complete the principle above.	Lecture, discussion,	3	test
13	3	Component of blood after storage, anti co-aggulants.	Lecture, discussion,	3	test
14	3	Blood transfusion disadvantage.	Lecture, discussion,	3	test
15	3	Quality control, Tools ,Persons , Method	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	**3- Clinical hematology in medical Practice** **By. G. C. d Grughy**
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	First Aid MLT 120
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 11- Teaching and training the student on how to provide first aid when an accident occ 2- Teaching and training the student on the proper and immediate treatment of the inju person. 3- Giving the student the correct instructions regarding first aid when an accident occu a laboratory.	
10. Course outcomes and teaching, learning and evaluation methods	
A- Cognitive objectives A1- Preserving the life of the injured person. A2- Identify how to stop harm or damage to the injured person, such as removing him from the area of harm or accident A3- Learn how to apply pressure to wounds to stop bleeding And how to deal with it.	
B - The skills objectives of the course. B1 - Introducing the student to the basics of first aid...	

B2 - Training students on the ability to act in emergency situations that can occur anywhere and at any time. B3 - Training students and increasing their skills in providing vital assistance before paramedics arrive. B4 - Training on the skill of dealing with accident cases, their symptoms, and methods of first aid.
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- That the student be able to provide first aid service C2- Providing the student with the necessary skills to provide first aid to people facing such as cases of cardiac arrest, stroke, bleeding, fractures, and fainting. A3- The student must be able to deal with the sick or injured person until the ambulance arrives C4- The student learns how to stop harm or damage from occurring, such as removing the patient from the source of harm or the scene of the accident and applying pressure on wounds to stop bleeding. C5- Enhancing the student's skills in providing first aid in a timely manner
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.

D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	First aid	Lecture, discussion,	2	Test
2	3	Burns	Lecture, discussions	2	Test
3	3	Biological factors	Lecture, discussion,	2	Test
4	3	Physical factors	Lecture, discussion,	2	Test
5	3	Chemical factors	Lecture, discussion,	2	Test
6	3	Wounds	Lecture, discussion	2	Test
7	3	Bleeding	Lecture, discussion,	2	Test
8	3	Trauma	Lecture, discussion,	2	Test
9	3	Fractures	Lecture, discussion,	2	Test
10	3	Fracture first aid	Lecture, discussion,	2	Test

11	3	Spinal fractures	Lecture, discussion,	2	Test
12	3	Accident ambulance	Lecture, discussion,	2	Test
13	3	Insect bites	Lecture, discussion,	2	Test
14	3	Insect bites aid	Lecture, discussion,	2	Test
15	3	Review	Lecture, discussion,	2	Test

12.Infrastructure	
Required reading:	
Main references (sources)	
Recommended books and references (scientific journals, reports,...)	THE COMPLETE FIRST AID1 2–FIRST AID CUIDE
B - Electronic references, Internet sites...	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab.Techniques Department
3. Course title/code	Psychology MLT 106
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training the student on how to receive the patient.
2- Teaching and training the student to take the appropriate position for the patient.
3- Teaching and training the student to prepare the patient to take the sample.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1. Identifying the types of motivations, feelings, thinking, and intelligence among healthy and sick individuals

A2-. Identifying individual differences between individuals while conducting tests and taking samples.

A 3Highlighting some of the situation and behavioral manifestations and how to take them into account while providing services

B - The skills objectives of the course. B1 - Training in determining the appropriate position for take sample from the patient. B2 -. Training students on how to think properly while dealing with problems they face while working B3 -. Training students to develop their creative skills and abilities through the principles of psychology B4 -. Training to acquire information that helps them avoid disputes that occur during work
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- Training on how to deal with premature babies and newborns. C2- Training on how to deal with pregnant women. C3- Training on how to deal with unconscious patients. C4- Training on how to deal with elderly patients. C5- Training on how to deal with paralyzed patients. C6- Training on how to deal with patients who have injuries resulting from traffic collisions and exposure to gunfire.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Motives	Cognitive goals	3	Test
2	3	PassionL	Cognitive goals skills &	3	
3	3	Conflict and frustration	Measurement and evaluation	3	Test
4	3	Personal	Cognitive goals	3	Test
5	3	Attention and perception	Cognitive goals	3	Test
6	3	Thinking and learning	Cognitive goals skills &	3	test
7	3	Memory and forgetting	Measurement and evaluation	3	test
8	3	Intelligence and creativity	Cognitive goals	3	test
9	3	Cognitive field	Cognitive goals	3	test
10	3	The emotional field	Cognitive goals	3	test
11	3	Learning	Cognitive goals	3	test
12	3	the growth	Cognitive goals	3	test
13	3	Motivation	Cognitive goals	3	test
14	3	Objectives	Cognitive goals	3	test
15	3	Maturity	skills	3	test

12.Infrastructure	
Required reading:	Radiography
Main references (sources)	-1. Available in the institute's library

Recommended books and references (scientific journals, reports,...)	**1-Shelley Taylor, Health PSYCHOLOGICAL, 10th edition, 2018** **2-Rosie Spielman, Psychology, 1st edition, 2017**
B - Electronic references, Internet sites...	**1. Brian O'shea, Textbook of psychological medicine, 5nd edition, 2010**

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Computer 2 **NTU201**
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

2- Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

3. Perform his duties at the workplace for professional motives.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

B - The skills objectives of the course.

B1 - Teaching the student the skills of working on the computer and the use of ready-made applications and the principles of the Internet in the field of specialization.

Teaching and learning methods
((Theoretical lectures / practical lectures / field visits / solving examples / seminars / summer training))
Evaluation methods
((Oral exams / written tests / weekly reports / daily attendance / semester and final exams))
C- Emotional and value goals C1- Perform his duties at the workplace for professional motives.
Teaching and learning methods
((Theoretical lectures / practical lectures / field visits / solving examples / seminars / summer training))
Evaluation methods
((Oral Tests / Written Tests / Observation / Student Cumulative Record))
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Improve their discussion skills. D2- Raising their research perceptions and transferring the student from the stage of teaching to learning.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
2&1	2	Features of the word processor / running the word / the basic elements of the word window / flipping the language / definition of the paragraph / merging and splitting the paragraph / selecting (shading) the text.	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
3	2	New / Open Inventory File / Close Document / Save New Document / Save Existing Document / Preview Before Printing / Close Document / End Word	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
4	2	Clipboard: Cut / Copy / Paste / Copy Format Font: Change font / font size / enlarge and reduce font / clear formatting / change font color / text highlight color / subscript / superscript text / change case / underline style / effects / character spacing Paragraph: Numbering / Bullets / Create a bulleted list to existing text / Cancel bullets / Indent / Paragraph spacing / Line spacing / Text direction / Alignment / Borders & Shading Styles: Normal / No Spacing / Heading 1 / Heading 2 / Subtitle / Change Styles / Show Preview / Disable Linked Styles / Options Edit: Find/Go/Replace/Select	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
5	2	Pages: Blank Page / Cover Page / Page Break Table: Insert Table / Draw Table / Convert Text to Table / Excel Data Table / Quick Tables / Table Styles / Draw Table Borders Illustrations: Picture /	Knowledge and practical application	Practical + Theoretical	Tests & Discussion

		Clip Art / Prepared Shapes / Smart Art Drawing / Chart			
6	2	Header and footer: header / footer / page number Text: text box / ornate text Word art / signature line / date and time / object / equation / symbol.	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
7	2	Features: Themes / Colors / Fonts / Effects.	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
9&8	2	Attributes : Themes / Colors / Fonts / Effects Page Setup: Margins / Page Size / Orientation Page Background: Watermark / Page Color / Page Borders Order: Position / Bring Forward / Send to Background / Wrap Text / Align / Group / Rotate.	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
11&10	2	Table of Contents / Add Text / Update Table Footnotes: Insert footnote / Insert endnote / Next footnote / Show notes References and citation: insert quote / source management / style Captions: Insert Caption Index: Index Insertion / Mark Entry / Update Index	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
13&12	2	Creation: Envelopes / Labels Proofreading: Spelling & Grammar / Research / Thesaurus / Translation / Translation ScreenTip / Language Set / Word Count Comments: New Comment / Delete / Previous/Next Tracker: Track Changes/Balloons/Final Appearance Tag/Show Tags/Review Pane Changes: Accept/Reject/Previous/Next Protection: Protect your document Document views: Print layout / Full screen reading / Web layout / Outline / Draft Show and hide: ruler / gridlines / document map / thumbnail Zoom in and out: 100% / one page / two pages / page view Frame: New Frame / All Order / Split / Switch Tire Microsoft office word Help	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
15&14	2	Networks and their types / forms of networks / network protocols / Internet and its development / Internet and intranet / firewalls / some basic Internet concepts / Internet connection / open Internet browser / components of the Internet browsing window / browser icons / web addresses / browser use / change the start page / toolbars / close the browser and disconnect the Internet / archives / store favorite pages / search engines / how to search for information on the Internet / copy text and images to any application / download files from the Internet / prepare for printing /Print	Knowledge and practical application	Practical + Theoretical	Tests & Discussion

12.Infrastructure	
Required reading:	Available in the free department and library of the institute
Main references (sources)	Available in the free department and library of the institute
Recommended books and references (scientific journals, reports,...)	Internet

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Crimes of the Baath regime in Iraq NTU203
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical) * Scientific discussions
6. Semester/Year	Annual
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 1- Providing students with basic concepts related to the definition of crimes, their types and divisions. 2- Definition of crimes and violations of the former regime and types of international crimes 3- Introducing mass grave crimes and violations of Iraqi laws	

4- Addressing environmental crimes, the destruction of cities, policies of demographic change and extrajudicial detention 5- Explaining the role of the Supreme Criminal Court in dealing with the crimes of the Baath regime
10. Course outcomes and teaching, learning and evaluation methods
A.Cognitive objectives A1- Enabling students to understand the concept of crime and the types of national and international crimes. A2- Developing the knowledge aspects of the protection and guarantees of human rights. A3- Developing students' ability to distinguish between crimes and human rights violations and how to confront them
B - The skills objectives of the course. B1 – Enable students to understand the concept of national and international crime. B2 - Enable students to know human rights and how to defend these rights. And know the guarantees related to them.
Teaching and learning methods
((Theoretical lectures, periodic reports / periodic tests / practical case studies)).
Evaluation methods
((Periodic exams / direct questions / preparation of special reports))
C- Emotional and value goals C1- Development of legal culture C2- Carrying out his duties in the workplace with professional motives. C3- Instilling the values of tolerance and cooperation in society.
Teaching and learning methods
((Student groups / case studies / preparation of special reports))
Evaluation methods
((Periodic exams / direct questions / preparation of special reports))
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Developing the skills of students in the field of public service or the private sector. D2- Developing personal skills to develop students' legal culture.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	2	-Crimes of the Baath regime under the Law of the Supreme Iraqi Criminal Tribunal in 2005	Knowledge and practical application	theoretical	Tests & Discussion

		-The concept of crimes and their divisions -Definition of crime linguistically and idiomatically			
2	2	-Crime sections -Crimes of the Baath regime as documented in the Law of the Supreme Iraqi Criminal Tribunal in 2005	Knowledge and practical application	theoretical	Tests & Discussion
3	2	- Types of international crimes - Decisions issued by the Supreme Criminal Court	Knowledge and practical application	theoretical	Tests & Discussion
4	2	- Psychological and social crimes and their effects. - Mental Crimes - Mechanisms of psychological crimes - Effects of mental crimes	Knowledge and practical application	theoretical	Tests & Discussion
5	2	- Social crimes - Militarization of society - The position of the Baath regime on religion	Knowledge and practical application	theoretical	Tests & Discussion
6	2	- Violations of Iraqi laws - Photos of human rights violations and crimes of the authority	Knowledge and practical application	theoretical	Tests & Discussion
7	2	- Some decisions on political and military violations of the Baath regime	Knowledge and practical application	theoretical	Tests & Discussion
8	2	- Places of Prisons and Detention of the Baath Regime	Knowledge and practical application	theoretical	Tests & Discussion
9	2	- Environmental crimes of the Baath regime in Iraq	Knowledge and practical application	theoretical	Tests & Discussion
10	2	- War and radioactive contamination and mine explosions	Knowledge and practical application	theoretical	Tests & Discussion
11	2	- Destruction of towns and villages - Scorched earth policy	Knowledge and practical application	theoretical	Tests & Discussion
12	2	- Drainage of marshes - Dredging palm groves, trees and plantings	Knowledge and practical application	theoretical	Tests & Discussion
13	2	- Mass grave crimes - Mass graves	Knowledge and practical application	theoretical	Tests & Discussion
14	2	- Mass graves and genocide committed by the Baathist regime	Knowledge and practical application	theoretical	Tests & Discussion
15	2	- Chronological classification of genocide graves in Iraq	Knowledge and practical application	theoretical	Tests & Discussion

12.Infrastructure

1 Required textbooks	General Books
2 Main references (sources)	Literature on crimes, penal law and human rights available in the college library and the central library of the university
3 Electronic references, websites	Human rights websites.

13.Course development plan
Access to modern scientific literature There are no proposals because the subject is taught in the current academic year for the first time

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ Medical technical lab. Techniques Department
3. Course title/code	Bio-Statistic / TIMM202
4. Program (s) to which it contributes	Technical Diploma in medical technical lab.
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Modules
7. Number of hours tuition (total)	30 Hour
8. Date of production/revision of this specification	12 /6 / 2025
9. Aims of the Course The student will be able to: • Processing and analyzing statistical data, arriving at correct conclusions, and preparing statistical forms.	
10. Course outcomes and teaching, learning and evaluation methods	
A. Cognitive objectives: The student will be able to: A1. Deal with statistical data. A2. Deal with and knowing life and health statistics.	

A3. Organize the statistical form and health form related to daily incidents such as births, deaths and diseases
B - Skills and Behavioral objectives: The student will be able to: • Analyze statistical data.
C- Emotional and Value-Based objectives: The student will be able to: • Explain the community's need to learn statistics and its applications at work
D - General and qualifying skills: D1. Access to scientific developments in the field of specialization. D2. Communication skills with others. D3. Self-reliance skills. D4. Teamwork skills.
Teaching and learning methods
Traditional lecturing, report writing, conducting seminars, group learning training.
Evaluation methods
Daily written and oral tests, Applied tests, Seminars, Semester and final exams, Commitments to assignments, Attendance and commitment, Feedback (Linking the current topic to the previous topic), Self-evaluation, Reports on scientific developments in the field of specialization, Asking analytical and deductive questions.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Definition of statistics. Data collection methods. Presentation and description of statistical data, preparation of a questionnaire (unclassified data) form.	Traditional lecture, seminars, group discussion	test
2	2	Representing frequency distributions for "classified data" Tabular display "Frequency distribution tables"	Traditional lecture, seminars, group discussion	test
3	2	Graphical display - inscribed histogram, curved histogram, histogram, polygon histogram	Traditional lecture, seminars, group discussion	test
4	2	measures of central tendency, Arithmetic mean .	Traditional lecture, seminars, group discussion	Test
5	2	The median, Mode	Traditional lecture, seminars, group discussion	Test
6	2	Introduction to sampling theory, "its meaning and reasons for choosing it."	Traditional lecture, seminars, group discussion	Test

7	2	Life statistics, ratio and rate, death statistics	Traditional lecture, seminars, group discussion	Test
8	2	Fertility statistics	Traditional lecture, seminars, group discussion	Test
9	2	Disease statistics, Life tables	Traditional lecture, seminars, group discussion	Test
10	2	Definition of health statistics and its sources	Traditional lecture, seminars, group discussion	Test
11	2	Fields that the health statistics address	Traditional lecture, seminars, group discussion	Test
12	2	Statistics of causes of death (medical certificate, cause, death, death certificate).	Traditional lecture, seminars, group discussion	Test
13	2	Statistics of health institutions	Traditional lecture, seminars, group discussion	Test
14	2	The most appropriate rates for hospitals and patients. Treatment days. Length of stay (average days of stay)	Traditional lecture, seminars, group discussion	Test
15	2	Family occupancy rate, Admission rate.	Traditional lecture, seminars, group discussion	Test

12.Infrastructure

Required reading:

W. Dixon and F. Massey – Introduction to statistical analysis

* علي عبد الأمير – طب نسائية وتوليد – وزارة الصحة – مطبعة العمال المركزية / 1985 .
* علي عبد الأمير – الأمراض النسائية والتوليد - وزارة الصحة – مطبعة العمال المركزية / 1985 .

Banderfort Hill, Fundament in Biosciences.

B - Electronic references, Internet sites...

13.Course development plan

- Access to modern scientific literature
- Participation in relevant scientific conferences
- The teaching and training staff is partially devoted to applying and
- working in hospitals Hosting specialized professors

- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Biochemistry MLT208
4. Programme (s) to which it contributes	Technical Diploma in medical technical lab.
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 1-Teaching and training the student on how to use the spectrophotometer and the centrifuge.	

2-Teaching and training students to conduct chemical analyzes used in the laboratory to diagnose diseases.
3- Teaching and training students to recognize and differentiate between types of laboratory tests to develop their monitoring and observation skills in addition to the skills of recording and interpreting results.
4- Teaching and training the student to conduct analyzes to reveal the effectiveness of the body's organs in performing their various functions and the chemicals present in body fluids, especially blood. All of these substances are in fixed proportions, and any difference in these proportions has a satisfactory significance.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives
A1- Learn about conducting studies on blood, urine, and other body fluids..
A2- Learn how to distinguish between types of tests to detect the percentage of elements present in the body..
A3- Identifying the how to take samples from patient .

B - The skills objectives of the course.
B1- Training on methods of conducting chemical tests, such as examining carbohydrates, enzyme activity, and examining urine and mineral elements.
B2 - Training students on how to distinguish between each examination and how to diagnose examination results.
B3 - Training students on how to use a spectrophotometer and a centrifuge to examine samples.
B4 - Training on the skill of handling samples

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals
C1- That the student be able to diagnose diseases
C2- Significance in understanding the expectations and future complications of the disease after the diagnosis has been made.

C3-Therapeutic in monitoring the extent of the patient's response to treatment C4- Preventive in conducting health surveys of people to detect disease.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Introduction to Biochemistry and its role in medicine and used the device	Lecture, discussion,	3	Test
2	3	pH, water, buffers and devices used for diagenesis	Lecture, discussions	3	Test

3	3	Continuation of the lecture acid base balance and its disorders.	Lecture, discussion,	3	Test
4	3	Carbohydrates structure and metabolism	Lecture, discussion,	3	Test
5	3	Classification of carbohydrate, Structure, Function ,Metabolism of carbohydrate	Lecture, discussion,	3	Test
6	3	Introduction of Lipids, classified and structure	Lecture, discussion	3	Test
7	3	Function ,Metabolism of Lipids.	Lecture, discussion,	3	Test
8	3	Structure and function of proteins	Lecture, discussion,	3	test
9	3	Structure , function and metabolism of amino acids	Lecture, discussion,	3	test
10	3	nucleic acid and protein synthesis	Lecture, discussion,	3	test
11	3	DNA structure and replication, RNA structure and replication, Translation and protein synthesis	Lecture, discussion,	3	Test
12	3	Enzymes and enzymes kinetics	Lecture, discussion,	3	test
13	3	Mechanism of enzyme action, structure and functions, Enzyme kinetic and regulation	Lecture, discussion,	3	test
14	3	Hormones and Types ,properties, function	Lecture, discussion,	3	test
15	3	vitamins Types ,properties, function	Lecture, discussion,	3	Test

12.Infrastructure

Required reading:	
Main references (sources)	1-Modern experimental Biochemistry [3 ed], Rodney F. Boyer, Prentice Hall 2000. 4-Medical Biochemistry Baynes [2 ed], John W. Baynes & Marek H. Dominiczak , Mosby 2004.
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	3-Marks Basic Medical Biochemistry: A Clinical Approach, Michael Liederman and Alisa peet, MD/ 2017. 4-Fundamentals of Clinical Biochemistry: fundamentals & Ouick Review, Ms. Sushma uttam kanukale , 2019.

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab.Techniques Department
3. Course title/code	principle of Immunology MLT 214
4. Programme (s) to which it contributes	diploma Technical Labs medical
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities

6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training the student how to the work at field laboratories medical Miscellaneous
2- Teaching and training the student how to plural the information From Patient Such as The name and age and sex
3- Teaching and training the student how to Taking the sample From Patient whether was it blood or urination or Exit.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives
A1- Get to know On how to plural the information From Patient
A2- Get to know On etiology pathological and its relationship With some of them some
A3- Get to know On Effects side according to Results laboratory.

B - The skills objectives of the course.
B1 - Training On how to plural samples laboratory
B2 - Training On how to Preparation Patient for every check up just Status pathological
B3 - Training On how to save models whether she was blood or urination
B4 - Training On how to Procedure checkups.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals
C1- Training On Procedure Examinations certain From Before requester
C2- Training On Procedure checkups in the form of collective and analyze it C3- Training on understand functions.

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.

D - Transferable general and qualifying skills (other skills related to employability and personal

development).
D1- Field visits to gain experience from others.
D2- Access to scientific developments in the field of specialization (educational videos).
D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Definition of immunity and history of immunity	Lecture, discussion,	3	Test
2,3	6	Natural immunity types and mechanical of it.	Lecture, discussions	3	test
4	3	Acquired immunity and types of it .	Lecture, discussion,	3	test
5	3	Vaccine and types	Lecture, discussion,	3	Test
6	3	Structure of immunity system	Lecture, discussion,	3	test
7	3	Complement and its pathways	Lecture, discussion	3	test
8,9,10	9	Antigen definition &characteristic of it	Lecture, discussion,	3	test
11, 12	6	Ab define & types of it	Lecture, discussion,	3	test
13,14,15	9	Ab-Ag reaction and types of it	Lecture, discussion,	3	test

12.Infrastructure	
Required reading:	

Main references (sources)	- Immunology - Immunology translated into Arabic
Recommended books and references (scientific journals, reports,...)	1. HO issued Specialized scientific journals
B - Electronic references, Internet sites...	Wikipedia

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical laboratory Techniques Department

3. Course title/code	Protozoa MLT 206
4. Programme (s) to which it contributes	Diploma in medical laboratory technology
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching the student about the forms and life cycles and diagnosing parasites in general and protozoa in particular theoretically.

2- Teaching and training the student to examine ready-made slides of parasites of all kinds under a microscope to learn their shapes and distinguish between them.

3- Teaching and training the student to diagnose parasites in clinical samples (stool, urine, and blood) under an optical microscope, as well as using other diagnostic techniques.

1.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Identify the different types and types of parasites.

A2- Learn how to distinguish between the types of parasites under the microscope.

A3- Learn how to obtain clinical samples from the patient and how to deal with them.

B - The skills objectives of the course.

B1 - Training on examining ready-made slides using a microscope.

B2 - Training students on how to distinguish between primary cysts and worm eggs.

B3 - Training students on how to use a microscope to examine samples..

B4 - Training on the skill of handling samples..

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher’s answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals

C1- the connection between the parasite and the disease it causes.

C2- Understanding the similarities and differences between protozoan cysts and worm eggs on the one hand, and between protozoan cysts and worm eggs on the other hand.
C3- Explaining the different infection mechanisms for each parasite.
C4- Accurate knowledge of the types of parasites and the ways they are transmitted to humans.
C5- Explain and understand the reason for taking a sample and not another sample for each parasite.

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.

D - Transferable general and qualifying skills (other skills related to employability and personal development).
D1- Field visits to gain experience from others.
D2- Access to scientific developments in the field of specialization (educational videos).
D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Defines the parasites, parasitology. Types of parasites, types of host Classification of parasites (protozoa and metazoan). Metazoa (helminthes and arthropoda). Collection of sample. Preservation and fixatives solution	Lecture, discussion,	3	Test
2	3	Introduction generally in: • characteristic feature of protozoa • classification (Rhizopoda, Mastigophora, Ciliophora, Telospora) • General stool examination.	Lecture, discussions	3	Test

		• preparation of: • Iodine • Eosin • saline solutions			
3	3	Class: Rhizopoda (Pathogenic amoeba). Morphology, life cycle, pathogenicity, Lab diagnosis of: *Entamoeba histolytica:* morphology ,lab.diagnosis of pathogenic amoeba, Entamoeba histolytica. • permanent slides. • stool examination	Lecture, discussion,	3	Test
4	3	Class: Rhizopoda (free living-parasites amoeba). Morphology, pathogenesis, diagnosis of: • *Entamoeba gingivalis* • *Acanthomoeba* • *Naegleria* • *slides and pictures* • *stool examination*	Lecture, discussion,	3	Test
5	3	Class: Rhizopoda (nonpathogenic amoeba). Morphology, diagnosis of: • *Entamoeba coli* • *Idoamoeba butschlii* • *Endolimax nana* • *Entamoeba dispar* • *Dientamoeba fragilis* Differences between: *Entamoeba coli* and *Entamoeba histolytica* *Slides of Non pathogenic amoeba ,morphology, lab.diagnosis of:* • *iodamoeba butschlii* • *endolimax nana* • *dientamoeba fragilis* *stool examination.*	Lecture, discussion,	3	Test
6	3	Class: Mastigophora or Flagellates Generally introduction in: • characteristic feature and Classification in • Intestinal flagellate. • Blood and Tissue flagellate. • Genital flagellate. Intestinal flagellates: Morphology, life cycle, pathogenicity, Lab diagnosis of	Lecture, discussion	3	Test

		• *Giardia lamblia* • *Chilomastix mesnili* • *Trichomonas hominis* Slides and pictures of: • Giardia lamblia stool examination			
7	3	Genital flagellate. Morphology, life cycle, pathogenicity, Lab diagnosis of *Trichomonas Vaginales* Oral flagellate Morphology, life cycle, pathogenicity, Lab diagnosis of: *Trichomonas tenax* *l*ab. diagnosis, pathogenicity of: Genital flagellate(Trichomonas vaginalis .(Urine examination and slides Oral flagellates (Trichomonas tenax.(stool examination , slides	Lecture, discussion,	3	Test
8	3	Tissue and blood flagellate Hemoflagellates forms Morphology, life cycle, pathogenicity, Lab diagnosis of: • *Leishmania donovani* • *Leishmania tropica* • *Leishmania brazeliencis* sample of sand fly and pictures	Lecture, discussion,	3	Test
9	3	Morphology, life cycle, pathogenicity, Lab diagnosis of: • *Trypanosoma cruzi.* • *Trypanosoma brucei* Samples of: Tsetse fly and Reduviid bug	Lecture, discussion,	3	Test
10	3	Class: Ciliophora (ciliata). Morphology, life cycle, pathogenicity, Lab diagnosis of: *Blantidium coli* *samples ,slides, stool examination*	Lecture, discussion,	3	Test
11	3	**Review**	Lecture, discussion,	3	Test
12	3	Class: Sporozoa Introduction generally in: • characteristic feature of sporozoa. • Classification plasmodium ssp. In man and insects.	Lecture, discussion,	3	Test

		preparation of blood film (thick and thin blood film)			
13	3	pathogenicity, Lab diagnosis of: • plasmodium vivax. • Plasmodium ovale • *plasmodium malariae* • *Plasmodium falciparum* Short notes of *Babesia* ssp and differences in lab diagnosis with plasmodium ssp	Lecture, discussion,	3	Test
14	3	Morphology, life cycle, pathogenicity, Lab diagnosis of: • *Toxoplasma gondii* • *Isoporia belli* lab diagnosis of: • Toxoplasma gondii , Slides and pictures	Lecture, discussion,	3	Test
15	3	Morphology, life cycle, pathogenicity, Lab diagnosis of: • *Cryptosporidium sp.* • *Microsporidium* *samples ,slides, stool examination*	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	1.Paniker's Textbook of Medical Parasitology 2. Diagnostic Medical Parasitology 3. Atlas of Medical Parasitology
Recommended books and references (scientific journals, reports,...)	Clinical parasitology a practical approach (book).
B - Electronic references, Internet sites..	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors

- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Fundamentals of Bacteriology MLT 210
4. Programme (s) to which it contributes	Diploma in medical laboratory technology
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training the student on how to use the microscope.
2- Teaching and training students to examine all types of bacterial slides.
3- Teaching and training students to recognize and differentiate between types of bacteria.
4- Testing the effectiveness of antibiotics
5- Developing vaccines and researching the genetic composition of microorganisms..

10. Course outcomes and teaching, learning and evaluation methods

A- Cognitive objectives
A1- Identify the structure of bacteria.
A2- Learn how to distinguish between types of pathogenic bacteria.
A3- Identify how to isolate germs and methods of diagnosing them.

B - The skills objectives of the course.
B1 - Training on examining slides.
B2 - Training students on how to distinguish germs microscopically and using ancient cultural methods.
B3 - Training students on how to use a microscope to examine samples.
B4 - Training on the skill of handling samples.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals C1- That the student is able to link the types of samples and the species of bacteria isolated from them C2-Understanding the similarities and differences between germs C3- Explaining the mechanisms of bacterial resistance to antibiotics C4- Accurate knowledge of the types of commensal germs and their locations C5- Explaining and understanding the reason for taking a sample and not another sample
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	laboratory safety methods	Lecture, discussion,	3	Test
2	3	laboratory instrument	Lecture, discussions	3	Test
3	3	Sterilization and disinfection	Lecture, discussion,	3	Test
4	3	Culture Media	Lecture, discussion,	3	Test
5	3	Laboratory stains	Lecture, discussion,	3	Test
6	3	Laboratory stains	Lecture, discussion	3	Test

7	3	Zehil – Neelson stain	Lecture, discussion,	3	Test
8	3	-7Sensitivity test for antibiotic..	Lecture, discussion,	3	test
9	3	Bacterial structure	Lecture, discussion,	3	test
10	3	bacterial spores	Lecture, discussion,	3	test
11	3	Method of cultivation streaking method	Lecture, discussion,	3	Test
12	3	Method of cultivation spreading	Lecture, discussion,	3	test
13	3	Method of cultivation stapping	Lecture, discussion,	3	test
14	3	Growth requirement	Lecture, discussion,	3	test
15	3	Review and examination	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	
Recommended books and references (scientific journals, reports,...)	1. Joanne willey – Prescotts Microbiology 2019 2. Jawetz Melnick and Adelbrgs Medical Microbiology 2019 3. Brock Biology of Microbiology 2019
B - Electronic references, Internet sites...	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors

- Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Virology MLT 209
4. Programme (s) to which it contributes	diploma Technical Labs medical
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training the student how to the work at field laboratories medical Miscellaneous

2- Teaching and training the student how to plural the information From Patient Such as The name and age and sex

3- Teaching and training the student how to Taking the sample From Patient whether was it blood or urination or Exit.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Get to know On how to plural the information From Patient

A2- Get to know On etiology pathological and its relationship With some of them some

A3- Get to know On Effects side according to Results laboratory.

B - The skills objectives of the course.

B1 - Training On how to plural samples laboratory

B2 - Training On how to Preparation Patient for every check up just Status pathological

B3 - Training On how to save models whether she was blood or urination

B4 - Training On how to Procedure checkups.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject),

self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- Training On Procedure Examinations certain From Before requester C2- Training On Procedure checkups in the form of collective and analyze it C3- Training on understand functions.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Introduction , General properties of virus, structure, classification of DND & RNA virus	Lecture, discussion,	3	Test
2	3	Replication of DNA & RNA virus	Lecture, discussions	3	test
3	3	Virus isolation & cultivation	Lecture, discussion,	3	test
4	3	Chemotherapy , antiviral agent & vaccines	Lecture, discussion,	3	Test
5	3	Influenza viruses	Lecture, discussion,	3	test
6	3	Paramyxo & Robella viruses	Lecture, discussion	3	test
7	3	Enteric viruses , Rhinovirus group	Lecture, discussion,	3	test

8	3	Pathogenesis of viruses and Genetic of viruses	Lecture, discussion,	3	test
9	3	Hepatitis viruses	Lecture, discussion,	3	test
10	3	Oncogenic viruses	Lecture, discussion,	3	test
11	3	Hepatitis viruses	Lecture, discussion,	3	test
12	3	Rubies & other neurotropic viruses	Lecture, discussion,	3	test
13	3	Arbo viruses & viral haemorrhagic viruses	Lecture, discussion,	3	test
14	3	Adeno , pox & parvo viruses	Lecture, discussion,	3	test
15	3	Retro & Adis	Lecture, discussion,	3	test

12.Infrastructure	
Required reading:	1- Virology,
Main references (sources)	1– Virology Principles and Applications by Carter, John Saunders, Venetia. **2-** Virology: Essays for the Living, the Dead, and the Small Things in Between..
Recommended books and references (scientific journals, reports,...)	WHO issued Specialized scientific journals
B - Electronic references, Internet sites...	1-Wikipedia. 2-https://virologyj.biomedcentral.com

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Introduction of Hematology (MLT 215)
4. Programme (s) to which it contributes	Diploma in medical laboratory techniques
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45hr
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training students on the basic concepts of blood diseases and the principles of blood testing.
2- Teaching and training the student on how to take a blood sample and identify the components of bl in special ways.
3- Teaching and training the student on how to prepare blood sample smears and how to distinguish between abnormal and normal cells from blood cells.
4- Teaching and training students on the methods of pathological analyzes that are conducted to reach pathological diagnosis.
5- Teaching and training students on how to handle and use different chemical dyes to diagnose blood diseases.

10. Course outcomes and teaching, learning and evaluation methods

A1- Identifying the various devices and tests available and learning about the different

components of blood.
A2- Getting to know the procedure of special analyzes and knowing the clinical conditions accompanying these tests
A3- Identify and detect routine blood diseases and their causes using special tests..

B - The skills objectives of the course.
1 - Acquire knowledge of dealing with pathological samples, laboratory materials and equipment, and be aware of the importance of their danger, how to deal with them, and conduct the necessary medical analyzes.
B2 - Building and developing students' talents and abilities in the field of medical analysis and how to use the microscope to examine samples.
B3 - Ensure that laboratory safety measures are taken to preserve the safety of workers and the safety of public and private property of the laboratory.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, summer training.in the hospital.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals
C1- Training on pathological variables and their relationship to clinical diseases.
C2- Training on how to analyze laboratory results in light of clinical examinations and provide accurate and rapid results.
C3- Training on how to deal with unconscious patients and the elderly when drawing blood.
C4- Explaining and understanding the reason for taking a blood sample and not another sample when conducting medical tests.
C5- The ability to archive patient information for reference when needed.

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, summer training in hospitals,.

Evaluation methods

Sick case simulation ,Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as

making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	1	Introduction importanc haematology. study the bl conta	Lecture, discussion,	1	Test
2	1	The haemoto Poièsis in fea children and ac	Lecture, discussions	1	test
3	1	The normal red blood c importance. Struc erythropoiesis and Funct	Lecture, discussion,	1	test
4	1	Polycythemia ,causes Clir Signs and Labora diagnc	Lecture, discussion,	1	Test
5	1	Study the red cell morphol in health and dise Abnormality of R.B.C in s	Lecture, discussion,	1	test
6	1	Abnormality of R.B.C in sh	Lecture, discussion	1	test

7	1	Abnormality of R.B. col	Lecture, discussion,	1	test
8	1	The normal Hb. Of the bl contain and importa	Lecture, discussion,	1	test
9	1	Study the types of normal Ty	Lecture, discussion,	1	test
10	1	Common Hb. Var	Lecture, discussion,	1	test
11	1	Anemia, definit classification and ty	Lecture, discussion,	1	Test
12	1	Anemia. Causes .clinical s and laboratory Find	Lecture, discussion,	1	test
13	1	Megaloblastic anemia Pernicious ane	Lecture, discussion,	1	test
14	1	Aphastic anemia and hemol ane	Lecture, discussion,	1	test
15	1	Sickle Cell an. And acqu and autoimmune hemol ane	Lecture, discussion,	1	Test

12.Infrastructure	
Required reading:	Hematology
Main references (sources)	-1 Keohane, Elaine M., Catherine N. Otto, and Jeanine M. Walenga. Rodak's hematology-e-book: clinical principles and applications. Elsevier Health Sciences, 2019. -2 Ciesla, Betty. Hematology in practice. Fa Davis, 2018. -3 Hoffbrand, Victor, et al. Color Atlas of Clinical Hematology: Molecular and Cellular Basis of Disease. John Wiley & Sons, 2019.

Recommended books and references (scientific journals, reports,...)	Sternberq surgical pathology Williams Hematology British journal of pathology Human pathology journal
B - Electronic references, Internet sites...	Webpath.com

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Clinical chemistry MLT216
4. Programme (s) to which it contributes	Diploma in medical laboratory techniques
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 1- Teaching and training the student on how to use and maintain the necessary equipment and tools. 2- Teaching and training students to estimate the components of blood and other body fluids descriptively and quantitatively. 3- Teaching and training the student to have the ability to collect and handle biological samples. 4- Teaching and training the student to be able to work safely in laboratories.	
10. Course outcomes and teaching, learning and evaluation methods	
A.Cognitive objectives	

A1- Learn about conducting studies on blood, urine, and other body fluids A2- Learn how to distinguish between types of tests to detect and treat disease. A3- Learn how to obtain the sample from the patient and how to deal with it.
B - The skills objectives of the course. B1 - Training in conducting chemical tests such as kidney and liver tests and measuring levels of proteins, fats and sugars. B2 - Training students on how to distinguish between each examination and how to diagnose examination results. B3 - Training students on how to use a spectrophotometer and a centrifuge to examine samples. B4 - Training on the skill of handling samples
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- That the student be able to diagnose diseases C2- Significance in understanding the expectations and future complications of the disease after the diagnosis has been made. C3-Therapeutic in monitoring the extent of the patient's response to treatment C4- Preventive in conducting health surveys of people to detect disease C5- Research in participating in research and clinical trials
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Introduction to clinical chemistry, Definition and scope of clinical chemistry	Lecture, discussion,	3	Test
2	3	Clinical laboratory techniques and instrumentation	Lecture, discussions	3	Test
3	3	Blood chemistry, Blood composition and functions	Lecture, discussion,	3	Test
4	3	Serum and plasma components, Complete Blood Count (CBC	Lecture, discussion,	3	Test
5	3	Renal function test and structure	Lecture, discussion,	3	Test
6	3	Electrolyte balance Blood urea nitrogen (BUN) and creatinine,	Lecture, discussion	3	Test
7	3	Liver function test, Liver anatomy and functions	Lecture, discussion,	3	Test
8	3	Introduction to clinical chemistry, Definition and scope of clinical chemistry	Lecture, discussion,	3	Test
9	3	Serum enzymes (AST, ALT, ALP, GGT), Bilirubin metabolism	Lecture, discussion,	3	Test
10	3	Lipid profile and cardiovascular markers, Cholesterol and Lipoproteins	Lecture, discussion,	3	Test
11	3	Triglycerides, Cardiac enzymes and markers	Lecture, discussion,	3	Test
12	3	Endocrine function test, Hormones and their functions.	Lecture, discussion,	3	Test
13	3	Thyroid function tests, Diabetes and glucose monitoring.	Lecture, discussion,	3	test
14	3	introduction Tumor markers,	Lecture, discussion,	3	test
15	3	special topics and case	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	

Main references (sources)	1- Clinical Chemistry [5th ed] , William J. Marshall MA PhD MSc MBS FRCP ath FRCPEdin FRSB FRSC, 2020. 2-Advances in Clinical Chemistry, Vol. 37 [1st ed.], Herbert E. Spiegel, Gerard Nowacki, Kwang-Jen Hsiao (Eds.) , Academic Press,2003.
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	Clinical Chemistry: Techniques, Principles, Correlations, 6th Edition, Michael L. Bishop, Edward P. Fody and Larry E. Schoeff, Lippincott Williams & Wilkins 2009.

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Immunopathology MLT 216
4. Programme (s) to which it contributes	diploma Technical Labs medical
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course** 1- Teaching and training the student how to Sign Up the information and documented at records Especially reservation in laboratories	

2- Teaching and training the student how to Procedure checkups for the patient 3- Teaching and training the student how to Delivery calendar checkups for the patient
10. Course outcomes and teaching, learning and evaluation methods
A.Cognitive objectives A1- Get to know On how to plural the information From Patient A2- Get to know On etiology pathological and its relationship With some of them some A3- Get to know On Effects side according to Results laboratory.
B - The skills objectives of the course. B1 - Training On how to plural samples laboratory B2 - Training On how to Preparation Patient for every check up just Status pathological B3 - Training On how to save models whether she was blood or urination B4 - Training On how to Procedure checkups.
Teaching and learning methods
Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.
Evaluation methods
Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- Training On Procedure Examinations certain From Before requester C2- Training On Procedure checkups in the form of collective and analyze it C3- Training on understand functions.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.
Evaluation methods
Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1,2,3	9	Ab-Ag reaction and types of it	Lecture, discussion,	3	Test
4,5	6	Immunoresponse and types of it	Lecture, discussions	3	test
6,7	6	Microorganism immunity, types of cellular and humoral immunity	Lecture, discussion,	3	test
8	3	Immunity to viruses	Lecture, discussion,	3	Test
9	3	Immunity to parasites	Lecture, discussion,	3	test
10	3	Immunity to fungi	Lecture, discussion	3	test
11	3	Microorganism immunity	Lecture, discussion,	3	test
12	3	Autoimmunity	Lecture, discussion,	3	test
13,14	6	Hyper sensitivity	Lecture, discussion,	3	test
15	3	AIDS & immunity	Lecture, discussion,	3	test

12.Infrastructure	
Required reading:	
Main references (sources)	1 Basic Immunology: Functions and Disorders of the Immune System 2- Medical microbiology & immunity 14.
Recommended books and references (scientific journals, reports,...)	2. HO issued Specialized scientific journals

B - Electronic references, Internet sites...	1-Wikipedia 2=https://www.immunology.org/public-information/what-immunology

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical laboratory Techniques Department
3. Course title/code	Worms (MLT217).
4. Programme (s) to which it contributes	Diploma in medical laboratory technology
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025
9. **Aims of the Course**	

1- Teaching the student about the forms and life cycles and diagnosing worms.
2- Teaching and training the student to examine slides of adult worms and their eggs under a microscope.
3- Teaching and training the student to diagnose parasites in clinical samples (stool, and urine) microscope.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives
A1- Identify the different species and genus of worms.
A2- Learn how to distinguish between the types of worms and debris under the microscope.
A3- Learn how to obtain clinical samples from the patient and how to deal with them.

B - The skills objectives of the course.
B1 - Training on examining slides using a microscope.
B2 - Training students on how to distinguish between protozoa cysts and worm eggs.
B3 - Training students on how to use a microscope to examine samples..
B4 - Training on the skill of handling samples..

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodologica training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals
C1- the connection between the infected parasits and caused clinical signs.
C2- Understanding the similarities and differences between protozoan cysts and worm eggs on the one hand, and between protozoan cysts and worm eggs on the other hand.
C3- Explaining the different infection mechanisms for each parasite.
C4- Accurate knowledge of the types of worms and transmission to human.

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in

light of the teacher's answers) and deductive and deductive questions.

D - Transferable general and qualifying skills (other skills related to employability and personal development).

D1- Field visits to gain experience from others.

D2- Access to scientific developments in the field of specialization (educational videos).

D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Introduction generally in : characteristic feature of Metazoa. Helminthes classification: Cestoda Trematoda Nematoda	Lecture, discussion,	3	Test
2	3	Class Cestoda Morphology, life cycle, pathogenicity, lab diagnosis of: *Taenia saginata* *Taenia solium* Slides, morphology, lab.diagnosis. stool examination , picture of : taenia saginata taenia solium	Lecture, discussions	3	Test
3	3	Morphology, life cycle, pathogenicity, lab diagnosis of: • *Hymenolepis nana* • *Hymenolepis diminuta* *Slides of Hymenolepis nana, hymenolepis diminuta, , lab. Diagnosis.*	Lecture, discussion,	3	Test

4	3	Morphology, life cycle, pathogenicity, lab diagnosis of: • *Echinococcus granulosis* *Slides of Echinococcus granulosis.* .	Lecture, discussion,	3	Test
5	3	Class: Trematoda • Ingeneral life cycle of *Schistosoma* spp. Morphology, life cycle, pathogenicity, lab diagnosis of: • *Schistosoma haematobium* • *Schistosoma mansoni* • *Schistosoma japonicum* Slides of stages and kind Schistosoma ssp. Schistosoma haematobium ,Schistosoma mansoni, Schistosoma japonicum, , lab diagnosis,sample of its snail	Lecture, discussion,	3	Test
6	3	Short notes and lab. Diagnosis of: • Liver flukes : *Fasciola hepatica* • Lung flukes: *Fasciola buski* • Intestinal flukes: *Heterophyes heterophyes* Slides and pictures: of liver flukes) fasciola hepatica)lung flukes) fasciola buski)intestinal flukes) heterophyes heterophes Lab.diagnosis ,morphology. Pathogenicity	Lecture, discussion	3	Test
7	3	Class Nematode	Lecture, discussion,	3	Test

		Morphology, life cycle, pathogenicity, lab diagnosis of: • *Ascaris lumbricoides* • *Trichuris trichura* slides stages and lab, diagnosis. *Ascaris lumbricoides, trichuris trichura,*			
8	3	Morphology, life cycle, pathogenicity, lab diagnosis of: *Enterobius vermicularis.* *Necator americanus.* *Ancylostoma dudenale* lab.diagnosis, slides (stages) Enterobius vermicularis ancylostoma dudenale,	Lecture, discussion,	3	Test
9	3	Larva migrants in human: pathogenicity, lab diagnosis of: 1. Cutaneous Larva migrants • *Ancylostoma caninum* • *Schistsoma sp.* slides (stages), lab.diagnosis • Necator americanus,	Lecture, discussion,	3	Test
10	3	Larva migrants in human: 2. Subcutaneous Larva migrants. • Scrow worm. • Myiasis. 3. Cutaneous Larva migrants. • Toxocara spp. Slides and pictures of Larva migrans in human lab. Diagnosis.	Lecture, discussion,	3	Test
11	3	Short notes of class :Annelida. Morphology, life cycle, pathogenicity, lab diagnosis of Hirudo.	Lecture, discussion,	3	Test

		slides and pictures of : • Trichinella spiralis			
12	3	Short notes of class :Arthropoda. Morphology, life cycle, pathogenicity, lab diagnosis of : 1. Insect • Anopheline • Sand fly • Tsetse fly • Reeduviid bug • Culex • Lice • Fleas. • Cimex. Filarial slides and pictures of: • wuchereia bancrofti • Loa- loa	Lecture, discussion,	3	Test
13	3	2. Arachnids. • Mites. • Tick Slides or pictures of some Arthropoda: • lice • fleas • scrow worm • tick • mites	Lecture, discussion,	3	Test
14	3	Review Concentration methods: • Flotation • Sedimentation • special concentration (formal ether)	Lecture, discussion,	3	Test
15	3	Examination (second one) And final examination	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	1.Paniker's Textbook of Medical Parasitology 2. Diagnostic Medical Parasitology 3. Atlas of Medical Parasitology
Recommended books and references (scientific journals, reports,...)	Clinical parasitology a practical approach (book).
B - Electronic references, Internet sites..	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	pathogenic bacteria **MLT210**
4. Programme (s) to which it contributes	diploma Technical Labs medical
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester

7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training the student on how to use the microscope.
2- Teaching and training students to examine all types of bacterial slides.
3- Teaching and training students to recognize and differentiate between types of bacteria.
4- Testing the effectiveness of antibiotics
5- Developing vaccines and researching the genetic composition of microorganisms..

10. Course outcomes and teaching, learning and evaluation methods

A- Cognitive objectives
A1- Identify the structure of bacteria.
A2- Learn how to distinguish between types of pathogenic bacteria.
A3- Identify how to isolate germs and methods of diagnosing them.

B - The skills objectives of the course.
B1 - Training on examining slides.
B2 - Training students on how to distinguish germs microscopically and using ancient cultural methods.
B3 - Training students on how to use a microscope to examine samples.
B4 - Training on the skill of handling samples.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals
C1- That the student is able to link the types of samples and the species of bacteria isolated from them
C2-Understanding the similarities and differences between germs
C3- Explaining the mechanisms of bacterial resistance to antibiotics
C4- Accurate knowledge of the types of commensal germs and their locations
C5- Explaining and understanding the reason for taking a sample and not another sample

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous

subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Staphylococcus	Lecture, discussion,	3	Test
2	3	Streptococcus	Lecture, discussions	3	Test
3	3	Streptococcus group B,C,D	Lecture, discussion,	3	Test
4	3	Gram positive bacilli – Corynebacterium	Lecture, discussion,	3	Test
5	3	Genes Mycobacterium	Lecture, discussion,	3	Test
6	3	Bacillus	Lecture, discussion	3	Test
7	3	Anaerobic bacteria , Clostridium	Lecture, discussion,	3	Test
8	3	Neisseria	Lecture, discussion,	3	Test
9	3	Genus Haemophilus	Lecture, discussion,	3	Test
10	3	Family Enterobacteriaceae	Lecture, discussion,	3	Test
11	3	Genus Proteus Shigella, Sallmonella	Lecture, discussion,	3	Test

12	3	Genus Pseudomonas	Lecture, discussion,	3	Test
13	3	Genus Vibirio	Lecture, discussion,	3	Test
14	3	Genus Brucella , *Yersinia pestis* , Francisella	Lecture, discussion,	3	Test
15	3	Nocardia	Lecture, discussion,	3	Test

12.Infrastructure	
Required reading:	
Main references (sources)	
Recommended books and references (scientific journals, reports,...)	- Joanne willey – Prescotts Microbiology 2019 - Jawetz Melnick and Adelbrgs Medical Microbiology 2019 - Brock Biology of Microbiology 2019
B - Electronic references, Internet sites...	

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Medical Technical Institute, Mosul / Department of Medical Laboratory Technique

3. Course title/code	Medical Mycology (MLT 212)
4. Programme (s) to which it contributes	Diploma in medical laboratory technique
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45 h
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

Acquaint students about medical mycology and diseases caused by, how to diagnose and treat.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- know the medical mycology and its importance.

A2- The students learn the types of pathogenic fungi.

A3- Learn all methods used to diagnosis fungi.

B - The skills objectives of the course.

B1 - Training students on isolation methods and the skill of dealing with fungal samples.

B2 - Training students on growing fungi in fungal media.

B3 - Training students on how to use microscope to examine fungal samples.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, methodological training in the hospital, and summer training.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.

C- Emotional and value goals

C1- The student is able to distinguish human fungal infections.

C2- Understand the similarities and differences between fungi and other microorganisms.

C3- Knowledge of antibiotics produced by fungi.

C4- Explaining and understanding the reason for taking a sample and not another.

Teaching and learning methods

Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, applied training in hospitals, and summer training.

Evaluation methods

Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and

deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure

Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	3	Fungus isolation in general and Introduction to medical Mycology	Lecture, discussion,	3	Test
2	3	Equipment, chemicals needed for fungal media	Lecture, discussions	3	test
3	3	Pathogenic fungi	Lecture, discussion,	3	test
4	3	Dermatophyte identification	Lecture, discussion,	3	Test
5	3	Candida identification	Lecture, discussion,	3	test
6	3	Penicillium identification	Lecture, discussion	3	test
7	3	Aspergillus identification	Lecture, discussion,	3	test
8	3	Actinomyces identification	Lecture, discussion,	3	test
9	3	Antibacterial Fungi	Lecture, discussion,	3	test
10	3	Fungi in cancer treatment	Lecture, discussion,	3	test
11	3	Fungi in treating other diseases	Lecture, discussion,	3	Test
12	3	Fungi in the food industries	Lecture, discussion,	3	test
13	3	Fungi in microbiology	Lecture, discussion,	3	test
14	3	Fungi in evolutionary biology	Lecture, discussion,	3	test
15	3	The future of medical mycology	Lecture, discussion,	3	Test

12.Infrastructure

Required reading:	
Main references (sources)	9. الأساس العملي للفطريات د. عبدالله صالح حسن 10. اهم الفطريات الطبية وامراضها د. كريمة امين الخفاجي – د. زيدان خليف المعموري
Recommended books and references (scientific journals, reports,...)	
B - Electronic references, Internet sites...	**1- Joanne willey- Prescotts Microbiology 2019** **2- Jawetz, Melnick & Adelberg's Medical Microbiology 2019** .

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges

COURSE SPECIFICATION

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Hawija technical institute/ medical technical lab. Techniques Department
3. Course title/code	Cytological Hematology (MLT 217)
4. Programme (s) to which it contributes	Diploma in medical laboratory techniques
5. Modes of Attendance offered	* Weekly lesson schedule (theoretical and practical) * Scientific discussions, seminars, other activities
6. Semester/Year	Semester
7. Number of hours tuition (total)	45hr
8. Date of production/revision of this specification	12 / 6 / 2025

9. **Aims of the Course**

1- Teaching and training students on the basic concepts of blood diseases and the principles of blood testing.

2- Teaching and training the student on how to take a blood sample and identify the components of bl in special ways.

3- Teaching and training the student on how to prepare blood sample smears and how to distinguish between abnormal and normal cells from blood cells.

4- Teaching and training students on the methods of pathological analyzes that are conducted to reach pathological diagnosis.

5- Teaching and training students on how to handle and use different chemical dyes to diagnose blood diseases.

10. Course outcomes and teaching, learning and evaluation methods

A.Cognitive objectives

A1- Identifying the various devices and tests available and learning about the different components of blood.

A2- Getting to know the procedure of special analyzes and knowing the clinical conditions accompanying these tests

A3- Identify and detect routine blood diseases and their causes using special tests..

B - The skills objectives of the course.

1 - Acquire knowledge of dealing with pathological samples, laboratory materials and equipment, and be aware of the importance of their danger, how to deal with them, and conduct the necessary medical analyzes.

B2 - Building and developing students' talents and abilities in the field of medical analysis and how to use the microscope to examine samples.

B3 - Ensure that laboratory safety measures are taken to preserve the safety of workers and the safety of public and private property of the laboratory.

Teaching and learning methods

Traditional lecture, report writing, seminar conduct, practical training in the laboratory, summer training.in the hospital.

Evaluation methods

Daily written and oral tests, applied tests, seminars, semester and final exams, obligations to assignments, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are set for the student by the teacher and the student answers the questions, and the teacher also answers the same questions and asks The student is asked to evaluate himself in light of the teacher's answers, reports on scientific developments in the field of specialization, and asks analytical and deductive questions.
C- Emotional and value goals C1- Training on pathological variables and their relationship to clinical diseases. C2- Training on how to analyze laboratory results in light of clinical examinations and provide accurate and rapid results. C3- Training on how to deal with unconscious patients and the elderly when drawing blood. C4- Explaining and understanding the reason for taking a blood sample and not another sample when conducting medical tests. C5- The ability to archive patient information for reference when needed.
Teaching and learning methods
Traditional lecture, self-learning, feedback, deductive and analytical thinking questions, methodological training in laboratories, summer training in hospitals,.
Evaluation methods
Sick case simulation ,Simulating the medical condition, written, oral, and applied tests, semester and final exams, daily tests, and commitments to assignments such as making reports in the field of specialization and then discussing the reports, attendance and commitment, feedback (testing the student on the previous subject), self-evaluation (questions are put to the student by the teacher The student answers the questions, and the teacher also answers the same questions. The student is asked to evaluate himself in light of the teacher's answers) and deductive and deductive questions.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Field visits to gain experience from others. D2- Access to scientific developments in the field of specialization (educational videos). D3- Practical training in hospitals.

11. Course Structure					
Week	Hours	Unit/Module or Topic Title	ILOs	Teaching Method	Assessment Method
1	1	Haemostasis, definition and types.The role of blood Vessels and Platelet in Haemostasis.	Lecture, discussion,	1	Test
2	1	Coagulation factors, name and figures.	Lecture, discussions	1	test
3	1	Coagulative Processes.	Lecture, discussion,	1	test
4	1	Haemostasis disorder types. Haemostasis due to blood vessels disorder.	Lecture, discussion,	1	Test
5	1	Haemostasis due to blood platelet disorder.	Lecture, discussion,	1	test
6	1	Haemostasis due to Coagulative disorder.	Lecture, discussion	1	test
7	1	The White blood Cells, types.	Lecture, discussion,	1	test
8	1	The maturation of W.B.C.	Lecture, discussion,	1	test
9	1	The function of W.B.C.	Lecture, discussion,	1	test
10	1	Leukocytosis.	Lecture, discussion,	1	test
11	1	Leukopenia.	Lecture, discussion,	1	Test
12	1	Leukemia, definition and classification.	Lecture, discussion,	1	test
13	1	Chronic and acute myeloid. L.	Lecture, discussion,	1	test

14	1	Chronic and acute myeloid. L.	Lecture, discussion,	1	test
15	1	Chronic and acute Monocytic .L.	Lecture, discussion,	1	Test

12.Infrastructure	
Required reading:	Hematology
Main references (sources)	-1 Keohane, Elaine M., Catherine N. Otto, and Jeanine M. Walenga. Rodak's hematology-e-book: clinical principles and applications. Elsevier Health Sciences, 2019. -2 Ciesla, Betty. Hematology in practice. Fa Davis, 2018. -3 Hoffbrand, Victor, et al. Color Atlas of Clinical Hematology: Molecular and Cellular Basis of Disease. John Wiley & Sons, 2019.
Recommended books and references (scientific journals, reports,...)	Sternberq surgical pathology Williams Hematology British journal of pathology Human pathology journal
B - Electronic references, Internet sites...	Webpath.com

13.Course development plan
- Access to modern scientific literature - Participation in relevant scientific conferences - The teaching and training staff is partially devoted to applying and - working in hospitals Hosting specialized professors - Academic pairing with other universities and corresponding colleges