Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Department of Quality Assurance and Academic Accreditation

Academic program description form for colleges and institutes

University: Northern Technical

Scientific Department: Medical Instrumentation Techniques

Signature:

Department head name: Dr.Hassan Messar Qassim

Date: 22 / 6 /2025

Signature: A.h

Vise Dean of scientific Affair :Dr. Ahamed j. Ali

Date: 22/ 7/2025

The file has already been checked.

Quality Assurance and University Performance Division

Name of the Director of the Quality Assurance and University Performance Division:

Mohamed Khaled Yousif

Date: 1 /7/2025

Signature

A.N

Dean's endorsement

1.Program vision

The pursuit of excellence in educating technicians specializing in medical device technologies, who possess both theoretical knowledge and practical skills, is crucial for driving digital transformation in healthcare systems and equipping medical institutions with skilled technical staff.

2.Program message:

The Department of Medical Device Technologies is dedicated to delivering exceptional technical education, equipping students with the scientific and professional knowledge needed to operate and maintain medical devices. By incorporating cutting-edge technology and healthcare ethics, we prepare students to excel in both public and private healthcare sectors. Our goal is to produce highly skilled medical technicians who can support the healthcare community with their expertise. Furthermore, we encourage high-achieving students to continue their academic pursuits in medical technical engineering fields.

3- Program objectives

1.To graduate technical professionals who are competent in operating, maintaining, and repairing various types of medical devices and equipment, and handling associated medical supplies**.**

2 **.**To develop students' skills in leveraging digital technologies and smart systems integral to modern medical devices**.**

3 **.**To implement practical and field training programs that simulate real-world work settings, preparing students for the demands of the job market**.**

4 **.**To enhance students' analytical thinking and problem-solving abilities, enabling them to respond rapidly and effectively to technical malfunctions**.**

5. To promote collaboration with healthcare and industrial partners to advance practical skills, uphold professional ethics, and ensure high-quality performance in medical technology.

4-Program accreditation:

nothing

5-Other external influences:

nothing

6-Program structure:

Program Structure	Number of Courses	Study Unit	Percentage	Notes *
University requirements	10	18		
Institute requirements	8	19		
Department requirements	24	83		
summer training		completed		
Other	/	There isn't any		

7- Program description

Year/level	Course or course code	Name of the course or course	Hours	Note
2025-2024/ first	**NTU100**	Democracy and Human Rights	2	
	NTU101	English language 1	2	
	NTU102	Computer 1	1	
	NTU103	Arabic language 1	2	
	NTU105	Physical Activity	1	
	NTU106	French Language	2	
	TIMO100	Mathematics	2	
	TIMO101	Mechanical Workshop	0	
	TIMO102	Engineering Drawing	0	
	TIMO103	Calculus	2	
	ETMI100	DC Current Circuits	2	
	ETMI101	AC Current Circuit	2	
	ETMI102	Analogue Electronic Principles	2	
	ETMI103	Digital Electronic Principles	2	
	ETMI104	Electronic workshop	0	
	ETMI105	Electrical workshop	0	
	ETMI107	Electrical Drawing	0	
	ETMI108	Physics	2	
	ETMI109	Medical Physics	2	

	ETMI110	Mechanics	2	
	ETEC107	Chemistry	2	
	ETEC108	Medical Chemistry	0	
	NTU202	Electrical Workshop		
2024-2025 / 2nd	**NTU 203**	English Language	2	
	NTU 204	Professional Ethics	2	
	TIMO200	Baath Party Crimes	2	
	TIMO201	Research Project	2	
	TIMO202	Specialized Workshop	2	
	TIMO203	Application Project	2	
	TIMO204	Professional safety	2	
	ETMI200	Electrical Measurements and Sensors	2	
	ETMI201	Basic Electronic Circuits	2	
	ETMI202	Principles of Microcomputer	2	
	ETMI203	Electronic Medical Instrumentations	2	
	ETMI204	Maintenance of Electronic Medical Instrumentations	0	
	ETMI206	Electromechanical Medical Instrumentations	2	
	ETMI207	Advanced Electronic Circuits	2	
	ETMI209	Physiology	2	
	ETMI210	Maintenance of Electro-mechanical Medical Instrumentations	0	
	ETMI212	Control systems	2	
	ETMI213	Programmable Logic Controller (PLC)	1	
	ETMI214	Renewable Energy Systems	1	

8.Required program outcomes and teaching, learning and evaluation methods

Knowledge Objectives:

A1. To provide graduates with comprehensive knowledge of managing diverse electronic systems and devices, ensuring optimal utilization.

A2. To equip graduates with in-depth understanding of medical devices, including component handling, assembly, and maintenance.

A3. To impart foundational knowledge in medical device technology, encompassing device selection, operational basics, assembly, and both software and hardware maintenance.

A4. To enable graduates to manage and control industrial automation systems effectively, interacting with modern machinery and devices.

A5. To prepare graduates for the workforce, keeping them abreast of the latest advancements in medical and electronic technologies, and enabling them to adapt to rapid technological changes.

A6. To train graduates in the use of electronic diagnostic tools specific to their field.

A7. To furnish graduates with the expertise needed to handle modern electronic devices, conduct inspections, and assess device functionality.

B - Program specific skill objectives

B1: Understanding Medical Electronic Components and Systems

- Providing the graduate with in-depth knowledge of electronic components and systems used in medical instrumentation, including their properties, functions, and applications.

- Familiarizing the graduate with the design and manufacturing of medical electronic devices, including biosensors, amplifiers, and signal processing units.

B2: Analyzing and Troubleshooting Medical Electronic Systems

- Equipping the graduate with the skills to analyze and troubleshoot medical electronic systems, including identifying faults, diagnosing problems, and implementing repairs.

- Providing hands-on experience with medical electronic equipment, such as ECG, EEG, and ultrasound machines.

B3: Maintaining and Calibrating Medical Instrumentation

- Preparing the graduate to perform routine maintenance, calibration, and testing of medical instrumentation to ensure accuracy, reliability, and safety.

- Teaching the graduate to identify and rectify common issues with medical electronic equipment, including software and hardware problems.

B4: Designing and Developing Medical Electronic Systems

-Providing the graduate with the skills to design and develop simple medical electronic systems using microcontrollers, programmable logic controllers, and other relevant technologies.

- Familiarizing the graduate with the integration of medical electronic systems with computers and other devices, including data acquisition, analysis, and visualization.

9. Teaching and learning methods

1. Theoretical lectures
2. Practical lectures (laboratories) 3.
Workshops of all kinds
4. Audio and visual aids
5. Scientific films
6. Scientific field visits
7. Summer training

10. Evaluation Methods

1. Daily quick tests (oral and written)
2. Midterm and final exams
3. Homework
4. Daily or weekly practical reports
5. Immediate evaluation of performance in workshops and laboratories
6. Study sessions
7. Performing a distinctive extracurricular activity
8. Discussing graduation projects

C- Emotional and value-based objectives.

C1: Academic and Technical Knowledge in Medical Devices

-Possessing in-depth academic and technical knowledge in the field of medical devices, including their design, development, and application.

-Understanding the principles of medical device technology, including biosensors, medical imaging, and diagnostic equipment.

C2: Staying Current with Advances in Medical Technology

-Keeping pace with the rapid advancements in medical technology, including innovations in medical devices, diagnostic techniques, and therapeutic equipment.

-Familiarity with the latest developments in medical device technology, including wearable devices, telemedicine, and point-of-care diagnostics.

C3: Maintenance and Sustainability of Medical Equipment

-Managing and implementing maintenance programs for medical equipment to ensure optimal performance, reliability, and safety.

-Developing and executing plans for the sustainability and development of medical equipment, including upgrades, repairs, and replacements.

C4: Installation, Operation, and Testing of Medical Devices

-Possessing the knowledge and skills to install, operate, and test medical devices, including diagnostic equipment, therapeutic devices, and patient monitoring systems.

-Understanding the principles of medical device safety, including electrical safety, radiation safety, and infection control.

C5: Programming and Configuration of Medical Devices

-Having the ability to program and configure medical devices, including software and firmware updates, to ensure optimal performance and functionality.

-Familiarity with medical device integration, including connectivity and interoperability with other medical systems.

C6: Staying Current with Advances in Medical Device Technology

-Possessing knowledge and awareness of the latest advancements in medical device technology, including innovations in medical imaging, diagnostic techniques, and therapeutic equipment.

- Understanding the applications and limitations of medical devices, including their role in patient care and treatment.

11-The teaching staff

Faculty members

Academic rank	specialization		Special requirements/skills (if any)		preparation of the teaching staff	
	general	Specialized			lecturer	staff
Assistant Professor	Electrical Engineering:	Electronics and Communications:			staff	
Lecturer	Electrical Engineering:	Communications:			staff	
Lecturer	Electrical Engineering:	Electronics:			staff	
Lecturer	Computer Engineering:	Power Electronics:			staff	
Lecturer	Biomedical Engineering:	Computer Engineering:			staff	
Assistant Lecturer	Electronics and Communications Engineering:	Biomedical Engineering:			staff	
Assistant Lecturer	Computer Technology Engineering:	Electronics and Communications Engineering:			staff	
Assistant Lecturer	Electrical Engineering:	Computer Technology Engineering:			staff	
Assistant Lecturer	Electrical Engineering:	Electronics and Communications:				
Assistant Lecturer	Physics	Physics:				
Assistant Lecturer	Chemistry:	Industrial Chemistry:				
Assistant Lecturer	Physics	Physics:				
Assistant Lecturer	. Mathematics:	.				

Assistant Lecturer	. English Education:				

12-Professional development
Orienting new faculty members
Professional development
Professional development for faculty members

13-Acceptance criterion
1-Average 2- Desire 3- Corresponding specialization in vocational secondary schools.

14- The most important sources of information about the program
-External sources (the Internet) - Scientific research and its latest developments -Methodological books

15-Program development plan
1- Learn about recent scientific developments. 2- Participation in international and local conferences. 3- Participation in scientific workshops inside and outside Iraq. 4- Hosting scientific competencies in the field of specialization

				Level 1 Syllabus
	Course name		UNIT	code

University Requirements (10-15) %	Arabic Language	English Language	Th	P		
	حقوق الانسان والديمقراطية	Human Rights and Democracy	2	0	2	NTU100
	اللغة الانكليزية	English Language	1	1	2	NTU101
	مبادئ الحاسوب 1	Principles of Computer 1	2	0	2	NTU102
	اللغة العربية	Arabic Language	2	0	2	NTU103
	الرياضة (اختياري)	Sport	1	1	2	NTU105
	اللغة الفرنسية (اختياري)	French Language	2	0	2	NTU106
		Total university requirements units			8	
Requirements of the (institute or college)16-22) %	الرياضيات	Mathematics	2	0	2	TIMO100
	معامل ميكانيك	Mechanical Workshop	0	3	3	TIMO101
	رسم هندسي	Engineering Drawing	0	3	3	TIMO102
	تفاضل وتكامل	Calculus	2	0	2	TIMO103
		Total units of formation requirements (institute-college)			10	
Department Requirements (63-74) %	دوائر التيار المستمر	DC Current Circuits	2	2	4	ETMI100
	دوائر التيار المتناوب	AC Current Circuits	2	2	4	ETMI101
	مبادئ الألكترونيك التناظري	Analogue Electronics principle	2	2	4	ETMI102
	مبادئ الألكترونيك الرقمي	Digital Electronics principles	2	2	4	ETMI103
	ورشة إلكترونية	Electronic Workshop	0	3	3	ETMI104
	ورشة كهربائية	Electrical Workshop	0	2	2	ETMI105
	الرسم كهربائي	Electrical Drawing	0	3	3	ETMI107
	فيزياء	Physics	2	2	4	ETMI108
	فيزياء طبية	Medical Physics	2	2	4	ETMI109
	كيمياء	Chemistry	2	2	4	ETMI110
	كيمياء طبية	Medical Chemistry	2	2	4	ETMI111
	ميكانيك	Mechanics	2	0	2	ETMI112
		Total units of department requirements			**42**	

Requirement type	Course name				UNIT	code
	Arabic Language	English Language	Th	P		
University Requirements (10-15) %	اللغة الانكليزية	English Language	2	-	2	NTU 200
	الحاسوب	Computer	1	1	2	NTU 201
	اللغة العربية	Arabic Language	2	-	2	NTU 202
	جرائم نظام البعث في العراق	Crimes of the Baath regime in Iraq	2	-	2	NTU 203
	أخلاقيات المهنة	Professional Ethics	2	-	2	NTU 204
		Total university requirements units			10	
Requirements of the (institute or college (16-22) %	مشروع بحث	Research Project	2	0	2	TIMO200
	ورشة تخصصية	Specialized Workshop	0	3	3	TIMO201
	مشروع تطبيقي	Application Project	0	2	2	TIMO202
	سلامة مهنية	Professional safety	2	0	2	TIMO203
		Total units of formation requirements (institute-college)			9	
Department Requirements (63-74) %	القياسات الكهربائية والمتحسسات	Electrical Measurements and Sensors	2	2	4	ETMI200
	دوائر الكترونية أساسية	Basic Electronic Circuits	2	3	5	ETMI201
	مبادئ الحاسوب الدقيق	Principles of Microcomputer	2	2	4	ETMI202
	الأجهزة الطبية الالكترونية	Electronic Medical Instrumentations	2	2	4	ETMI203
	صيانة الأجهزة الطبية الالكترونية	Maintenance of Electronic Medical Instrumentations	0	3	3	ETMI204
	الأجهزة الطبية الكهرو ميكانيكية	Electromechanical Medical Instrumentations	2	2	4	ETMI206
	دوائر الكترونية متقدمة	Advanced Electronic Circuits	2	3	5	ETMI207
	فسلجه	Physiology	2	0	2	ETMI209
	صيانة الأجهزة الطبية الكهرو ميكانيكية	Maintenance of Electro-mechanical Medical Instrumentations	0	3	3	ETMI210
	نظم السيطرة	Control systems	2	2	4	ETMI212
	متحكم منطقي قابل للبرمجة	Programmable Logic Controller (PLC)	1	2	3	ETMI213
	منظومات الطاقة المتجددة (إختياري)	Renewable Energy Systems	1	2	3	ETMI214
	تطبيقات الحاسبة (إختياري)	Computer Applications	1	2	3	ETMI215
		Total units of department requirements			41	

Program skills chart																			
Learning outcomes required from the program																			
Year/level	Course code	Course name	Essential or optional	Knowledge				skills				values				Knowledge			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
First	**NTU 100**	Democracy and Human Rights	Essential			√				√			√						
	NTU 101	English language 1	Essential		√			√					√						
	NTU 102	Computer 1	Essential	√			√	√					√						
	NTU 103	Arabic language 1	Essential	√				√					√						
	NTU 104	sport	optional	√				√					√						
	NTU 105	French Language	optional	√				√	√	√		√	√						
	MTI100	Mathematics	Essential	√	√			√	√	√	√	√	√	√	√	√	√	√	√
	MTI101	Mechanical Workshops	Essential	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	MTI102	Engineering Drawing	Essential	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	MTI103	Calculus	Essential	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√
	MTI100	Mathematics	Essential	√	√	√	√	√	√			√	√			√	√	√	√
	ETMI100	DC Current Circuits	Essential	√	√	√	√	√	√			√	√			√	√		

	ETMI101	AC Current Circuit	Essential	√			√	√	√							√			√
	ETMI102	Analogue Electronic Principles	Essential	√			√	√	√							√			√
	ETMI103	Digital Electronic Principles	Essential	√		√	√	√	√	√	√					√	√	√	√
	ETMI104	Electronic workshop	Essential	√	√			√			√							√	√
	ETMI105	Electrical workshop	Essential	√	√	√	√	√		√	√					√	√	√	√
	ETMI107	Electrical Drawing	Essential	√	√	√	√	√	√	√	√					√	√	√	√
	ETMI108	Physics	Essential	√	√		√	√	√	√	√					√	√	√	√
	ETMI109	Medical Physics	Essential	√	√	√				√	√					√	√		√
	ETMI110	Chemistry	Essential	√	√	√	√	√	√	√	√					√	√		√
	ETMI111	Medical Chemistry	Essential	√	√	√	√	√	√	√	√					√	√	√	√
	ETMI112	Mechanics	Essential	√	√	√	√	√	√	√	√						√	√	√

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course title/code	Democracy and Human Rights NTU100
4. Programme (s) to which it contributes	Technical 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	8 / 1 / 2024

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	Knowledge and application	Theoretical	Tests & Reports

		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			
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 opinion in respecting and protecting human rights	Knowledge and application	Theoretical	Tests & Reports
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

1. 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

2. 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.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course title/code	Computer **NTU102**
4. Programme (s) to which it contributes	Technical 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	8 / 1 / 2024
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- 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
8&9	2	Recycle Bin (delete, retrieve and empty the basket) / My Document icon	Knowledge and practical application	Practical + Theoretical	Tests & Discussion
10&11	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

12&13	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
14&15	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

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course title/code	Arabic Language NTU103
4. Programme (s) to which it contributes	Technical 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	8 / 1 / 2024
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 2. Differentiate between solar letters and lunar letters	Discussion method, lecture method	Oral test

3	2	Al-Daad and Al-Zaa	Differentiate between Dhad and Z	Discussio n method, lecture method	Oral test
4	2	Hamza writing	Enable the student to write the hamza correctly	Discussio n method, lecture method	Oral test
5	2	Punctuation	Recognize punctuation and write it in the correct location	Discussio n 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	Discussio n method, lecture method	Oral test
7	2	Effects	identify the types of effects and differentiate between them	Discussio n method, lecture method	Oral test
8	2	Number	Enable the student to write numbers correctly	Discussio n method, lecture method	Oral test
9	2	Applications of common linguistic errors	Recognize and avoid common language errors	Discussio n method, lecture method	Oral test
10	2	Applications of common linguistic errors	Recognize and avoid common language errors	Discussio n 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	Discussio n method, lecture method	Oral test
12	2	Formal aspects of administrative discourse	Identify the formal aspects of administrative discourse	Discussio n method, lecture method	Oral test
13	2	The language of administrative discourse	Recognize the language of administrative discourse	Discussio n method, lecture method	Oral test
14	2	The language of administrative discourse	Recognize the language of administrative discourse	Discussio n method, lecture method	Oral test

15	2	Samples of administrative correspondence	Identify samples of administrative correspondence	Discussio n 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.

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course title/code	**Sport NTU104**
4. Programme (s) to which it contributes	Technical 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	8 / 1 / 2024
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

1. Educational institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. Academic department/center	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course name/code	**DC circuits ETMI100**
4. Available forms of attendance	theoretical + Practical
5. Semester/year	courses
6. Number of study hours (total)	4 hours / week x decision =60 hours (theoretical And my work)
7. Date this description was prepared	7/1/2024
1. Course objectives	
• Apply Ohm's law and find the voltage, current and power in an electrical circuit. • How to calculate the equivalent resistance in series, parallel and mixed connections • Converting the connection from star to triangular and vice versa and finding the equivalent resistance. • Kirchhoff's law and how to analyze the circuit using Kirchhoff's law • How to solve using the mesh method which depends on Kirchhoff's voltage law. • Analyse complex electrical circuits using some theories such as Thevenin and Norton's theorem and the cumulative theory. • How to convert the voltage and current source from one to the other to facilitate solving the circuit and finding the current or voltage in any resistance in the electrical circuit.	

- The theory of maximum possible power transfer and how to derive it and find it in the electrical circuit.

10. Course outcomes, teaching, learning and assessment methods

A- Cognitive objectives

A1- Identify Ohm's law and its application and the units of the international system.

A2- Identify the different types of connections and find the equivalent resistance, current and voltage.

A3- The ability to apply and analyze the electrical circuit and find the voltage and current using theories.

B - Course specific skill objectives.

B1 - 1 The student should have the ability to think and solve problems and electrical circuits.

B2 - The student should have the ability to analyze and think scientifically by applying laws.

B3 - The student should have the ability to conduct scientific investigations related to aspects of electrical circuits .

Teaching and learning methods

1) Theoretical lectures
2) Scientific discussion in classrooms
3) Small group method
4) Conducting practical experiments in laboratories
5) Study sessions and presentation of the latest scientific developments globally by students
6) Scientific films and other means of clarification
7) Methodological training
8) Summer training

Evaluation methods

- Oral and written tests
- Midterm and final exams
- Practical reports
- Homework
- Daily assessment

- **C- Emotional and value-based objectives**

C1- Enhancing the love of knowledge and interest in the technical details of DC circuits.

C2- Encouraging accuracy and attention while working with DC components and devices.

C3- Developing patience and perseverance while solving problems and analyzing circuits.

C4- Enhancing cooperation and teamwork in DC laboratories and projects..

D- General and transferable skills (other skills related to employability and personal development).

D1-Understanding the basic principles of DC and how to analyze it and design circuits.

D2-Using the necessary tools and devices to measure and analyze DC.

D3-Designing DC circuits to meet specific specifications and analyzing their performance.

D4-Developing problem-solving and critical thinking skills by dealing with circuit challenges.

11.structure The decision / Level the first					
The week	**Hours**	**Required learning outcomes**	**Unit name/topic**	**Teaching method**	**Evaluation method**
the first	2				
the second	2	Knowing the units of the international system and the special components in the electrical circuit. Finding the voltage, current and power in a simple electrical circuit.	Electrical Quantities and Units Multiple and Submultiple of the Internal System Units (SI): Electrical Circuit Components Ohm's law Electrical Power Resistor Power Absorption	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final
the third	2	Applying the special law to find the resistance based on the length, area and specific resistance of the material, and finding the resistance value before or after being exposed to a temperature change based on the thermal coefficient of the material.	Resistance and Resistivity Resistor temperature coefficient	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final
Fourth	2	Applying the special laws for both series and parallel circuit connection, finding the voltage for each resistor in series connection using a voltage divider, and finding the current for each resistor in parallel connection using a current divider.	• Series Circuit • Voltage divider's law • Parallel circuit • Current divider's law	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final

Fifth	2	Finding the equivalent resistance and both voltage and current for each resistor in a series-parallel connection in an electrical circuit	• Series-Parallel combination • examples		
Sixth And the seventh	4	Converting delta to star and vice versa, finding the equivalent resistance and both voltage and current for each resistance in the electrical circuit	Wye-delta transformations Examples Solve various examples of types of connection	=	=
The eighth	2	Apply Kirchhoff's law and find both the voltage and current for each resistance in the electrical circuit	Kirchhoff's law method (Branch current method) Examples		
Ninth	4	Analysis of the electrical circuit that is difficult to solve using Ohm's law and apply and solve the electrical circuit using the Mesh method and find both the voltage and current for each resistance in the electrical circuit.	Mesh method (Maxwell current loop method) Examples	=	=
tenth	2	Apply and solve the electric circuit using the superposition theory and find both the voltage and current for each resistance in the electric circuit.	superposition theorem: Examples	=	=
eleventh	2	Apply and solve the electrical circuit using	Thevenin's theorem		

		Thevenin's theorem and find the load current in the electrical circuit.	Examples		
twelfth	2	Apply and solve the electrical circuit using Norton's theorem and find the load resistance current in the electrical circuit	Norton's Theorem Examples		
thirteenth	2	Apply and solve the electrical circuit using source conversion..	Source transformation Example		
fourteenth	2	Apply and solve the electrical circuit and find the maximum power transfer.	Maximum power transfer theorem Example	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final
fifteenth	2	Solve examples	Solve examples of all theories		

.	1- Books The reporter Required
1- Charles K. Alexander, Mathew NO Sadiku "Fundamental of electric circuit",3rd.	2- the reviewer Home (Sources)
	A Books References that Recommended With it (Magazines Scientific , reports ,....)
Technical Institute website / Mosul	for - the reviewer Electronic, Sites The Internet ....

13.Curriculum Development Plan
1- Curriculum Development 2- Laboratories Development 3- Continuing Education Courses 4- Showing Scientific Films 5- Holding Scientific Visits 6- Organizing Study Groups

1. Educational institution	the university Technology Northern
2. Academic department/center	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course name/code	**Digital Electronic Principles ETMI103**
4. Available forms of attendance	theoretical + Practical
5. Semester/year	courses
6. Number of study hours (total)	4 hours / week x decision =60 hours (theoretical And my work)
7. Date this description was prepared	7/1/2024

8. Course Objectives

- To introduce the basic principles of digital circuits and how they work.
- Develop the ability to design and analyze logical circuits.
- Theories and applications of digital logic, logic gates, counters, comparators, and numerical systems
- Identify the applications of digital circuits in electronic devices and communication systems.
- Use the tools and techniques necessary to design and test digital circuits.

9. Course outcomes, teaching, learning and assessment methods

B - Course specific cognitive objectives.

A1-Understanding the basic principles of digital circuits and numerical systems.

A2-Identifying logic gates* and how to use them in building circuits.

A3-Analyzing and designing logic circuits using specific tools and techniques for digital circuits in various electronic devices and communication systems.

B - Course specific skill objectives.

B1- Perform various operations on numerical systems.

B2- Design and implement various logical circuits.

B3- Simplify and analyze logical circuits.

B4- Implement practical applications of logical circuits.

Teaching and learning methods

- Theoretical lectures
- Scientific discussion in classrooms
- Small group method
- Conducting practical experiments in laboratories
- Study seminars and presentation of the latest scientific developments globally by students
- Scientific films and other means of clarification
- Methodological training
- Summer training

Methods Evaluation

- Evaluation Methods
- Oral and written tests
- Semester and final exams
- Practical reports

- Homework
- Daily assessment

C- Emotional and value-based objectives

C1- Developing students' sense of scientific curiosity towards digital circuits and their technologies.

C2- Encouraging teamwork and cooperation between students in projects and practical applications.

C3- Stimulating innovation and creativity in the design and analysis of digital circuits.

D- General and transferable skills (other skills related to employability and personal development).

D1 Design and analyze logic circuits* accurately.

D2 Use the software tools* necessary to design and test circuits.

D3- Understand the practical applications* of digital circuits in modern devices and systems.

D4- Develop logical thinking and problem solving* by dealing with the challenges of circuit design

11.structure The decision / Level the first

The week	Hours	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
the first	2	-	Course introduction, learning objectives, course content	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final
the second	2	Knowing the binary number system and its relationship with other systems and converting from the decimal system to this system and vice versa and converting from this system to the rest of the systems and the basis of the system and the	Number systems 1- The decimal system 2- The binary system 3- The octal system 4- The hexadecimal system	=	=

		symbols used for each system			
the third	2	Knowing the basis of the system and the symbols used for it and converting from the decimal system to this system and vice versa. Conversion from this system to the rest of the systems.	Conversions between number systems Conversion from the decimal system to other systems and vice versa Conversion from the binary system to hexadecimal and vice versa Converting fractional numbers	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final
Fourth	2	Knowledge of addition, subtraction, multiplication and division and complements in the binary system (1's complement and 2's complement) and subtraction using complements 4- Addition, subtraction and multiplication in the hexadecimal system	Arithmetic Operations in Binary Addition, Subtraction, Multiplication and Division Complements in Binary Subtraction Using Complements	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	Exams Daily Short Duties Home, Exams Quarterly And final
Fifth	2	Knowledge of basic gate studies and their reality tables reality table	Basic logic gates AND gate electrical circuit and its reality table OR gate electrical circuit and its reality table NOT gate electrical circuit and its	=	=
Sixth	2	Knowing the NAND gate, the electrical circuit and its reality table, the NOR gate, the electrical circuit and its reality table, the XOR gate, the electrical circuit and	Combination gates NAND gate NOR gate XOR gate and XNOR gate	=	=

		its reality table, the XNOR gate, the electrical circuit and its reality table.			
Seventh	2	Knowing the effect of reversing gate inputs and the effect of reversing gate outputs And the effect of reversing gate inputs and outputs	Converting gates using inverters The effect of reversing gate inputs The effect of reversing gate outputs The effect of reversing gate inputs and outputs	=	=
The eighth	2	Knowing the effect of reversing gate inputs and the effect of reversing gate outputs And the effect of reversing the entrances and exits of the gate	Knowing how to assemble gates using AND-OR gate logic And assembling logic gates using NAND gate logicAll logic gates Assembling gates using AND-OR gate logic Assembling logic gates using NAND gate logictes	=	=
Ninth	2	Understanding De Morcan's First Law Understanding De Morcan's Second	Law De Morcan's Laws De Morcan's First Law De Morcan's Second Law	=	=
tenth	2	Simplify logic circuits using the laws and rules of Boolean algebra.	Boolean algebra relations OR relations AND relations	=	=
eleventh	2	Simplify logic circuits using Boolean algebra rules and laws.	Boolean algebra laws My law of substitution Legal Collection Legal Distribution	Theoretical lectures and scientific discussion Showing scientific films, the	Exams Daily Short Duties Home, Exams Quarterly And final

				latest developments and means of clarification	
twelfth	2	Simplify logic circuits using Boolean algebra rules and laws.	Simplify logic equations using Boolean algebra rules and laws Reducing the number of gates used in the design	=	=
thirteenth	2		Universal Gates (NAND & NOR) Design of Logic Circuits Using Universal Gates	=	=
fourteenth	2		Writing logical equations from truth table Derive logical equation from truth table using SOP method. Derive logical equation from truth table using POS method.	=	=
fifteenth	2		Solve questions and review		

7 Structure Infrastructure	
	1- Books The reporter Required
	2- the reviewer Home (Sources)
1- Logic Circuits and Microprocessors - Communications Specialization. **Technical and Vocational Training Corporation - Saudi Arabia** **2-Digital Fundamentals, Thomas L.Floyd, Eleventh Edition.** **3-Digital Design, M.Morris Mano,**Prentice-Hall, 5th, 2013. **4- Digital Technology, Misty E. Vemaat, Discovering Computers 2018.** **5- Computing Essentials,**Timothy J. O'Leary, McGraw-Hill Education,	A Books References that Recommended With it (Magazines Scientific , reports ,....)

2017.	
Technical Institute website / Mosul	for - the reviewer Electronic, Sites The Internet ....

13.Plan Curriculum Development

1- Curriculum Development
2- Laboratories Development
3- Continuing Education Courses
4- Showing Scientific Films
5- Holding Scientific Visits
6- Organizing Study Groups

1. Educational institution	the university Technology Northern
2. Academic department/center	Mosul Technical Institute/ Electronic and Communications Techniques
3. Course name/code	**AC circuits ETMI101**
4. Available forms of attendance	theoretical + Practical
5. Semester/year	courses
6. Number of study hours (total)	4 hours / week x decision =60 hours (theoretical And my work)
7. Date this description was prepared	7/1/2024

• Course objectives

• The student should be able to find the frequency, period and wavelength of an AC sine wave.
• The student should be able to find the average voltage and square root of an AC sine wave.
• The student should learn how to calculate the impedance of capacitor, inductor and resistance in AC circuits.
• The student should be able to calculate the voltage, current and phase difference of capacitor, inductor and resistance in pure AC circuits.
• The student should learn how to calculate the voltage, current and phase difference of capacitor, inductor and resistance in series AC circuits.
• The student should learn how to calculate the voltage, current and phase difference of capacitor, inductor and resistance in parallel AC circuits.
• The student should be able to find the resonant frequency, quality factor and bandwidth difference in series and parallel.
• The student should be able to apply Thevenin and Norton theorems to AC circuits.

8 Course Outcomes, Teaching, Learning and Evaluation Method

A- Cognitive Objectives
A1- The student will learn the basics of alternating current and its related components such as inductors and capacitors.
A2- Enabling students to analyze alternating current circuits using mathematical tools and modern techniques.
A3- Understanding the practical applications of alternating current in various devices and systems.
A4- Studying electrical theories related to alternating current such as Kirchhoff's laws..

B - Course specific skill objectives.

B1- The student should have the ability to think and solve problems and electrical circuits.

B2- The student should have the ability to analyze and think scientifically by applying laws.

B3- The ability to conduct scientific investigations related to aspects of electrical circuits -

Teaching and learning methods

1- Theoretical lectures

-2 Scientific discussion in classrooms

-3 Small group method

-4 Conducting practical experiments in laboratories

-5 Study seminars and presentation of the latest scientific developments globally by students

6- Scientific films and other means of clarification

7- Methodological training

8- Summer training

Evaluation Methods

- Oral and written tests
- Midterm and final exams
- Practical reports
- Homework
- Daily assessment

C- Emotional and value-based objectives

C1- Motivating students to be interested in studying alternating current and understanding its importance in daily life applications.

C2- Building confidence in the ability to understand, analyze and apply the concepts of alternating current.

C3- Instilling values of accuracy and commitment in working on alternating current circuits, whether in design or analysis.

C4- Enhancing the ability to work in teams and exchange ideas about designing and analyzing circuits.

D- General and transferable skills (other skills related to employability and personal development).

D1- Gaining the experience that qualifies them to deal with the necessities of life, including experience in the field of connecting alternating electrical circuits.

D2- Gaining the experience that qualifies them to deal with electrical circuits and their components, voltage sources and electrical measuring devices.

D3- Gaining experience in reverse engineering electronic maps

11. structure The decision / Level the first

The week	Hours	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
the first	2	-	Course introduction,	Theoretical lectures	**Exams Daily Short Duties**

			learning objectives, course content	and scientific discussion Showing scientific films, the latest developments and means of clarification	**Home, Exams Quarterly And final**
the second	2	Finding the frequency and wavelength of the sine function and the constants of the form constant and the maximum constant	Sinewave function, frequency period, wavelength, angular measurement characteristic value of the voltage and current of sinewave form factor, peak factor	=	=
the third	2	Finding the phase difference, lead and delay between sinusoidal signals	Phase angle, lead and leg, phasor diagram examples	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	**Exams Daily Short Duties Home, Exams Quarterly And final**
Fourth	2	Finding the impedance, voltage and current for pure resistive, capacitive and inductive circuits	Purely resistive circuit Purely inductive circuit Purely capacitive circuit	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	**Exams Daily Short Duties Home, Exams Quarterly And final**
Fifth	2	Find the impedance, voltage and current for each of the RL-RC series circuits.	RL series circuits RC series circuits Examples	=	=
Sixth	2	Finding the impedance, voltage and current for each of the RLC series circuits	RLC series circuits examples	=	=

Seventh	2	Finding the impedance, voltage and current for each of the RL – RC parallel circuits	RL parallel circuits RC parallel circuits Example	=	=
The eighth	2	Finding the impedance, voltage and current for each of the RLC parallel circuits	RLC parallel circuits Examples		
Ninth	2		RLC parallel-series circuits Examples		
tenth	2	Finding the series resonant frequency and the specificity constant	Resonance series and Quality factor		
eleventh	2		Resonance Parallel circuits Examples	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	**Exams Daily Short Duties Home, Exams Quarterly And final**
twelfth	2		Solving various examples of series and parallel resonant circuits	=	=
thirteenth	2	Knowing the power triangle and the relationship between them and how to apply its laws	Power consumed, power factor, power triangular	=	=
fourteenth	2		Examples about power triangular	=	=
fifteenth	2	Application of theories in AC circuits	Thevenin's theorem and Norton		

			theorem in AC circuits		

8 Structure Infrastructure	
1- Books The reporter Required	
2- the reviewer Home (Sources)	
A Books References that Recommended With it (Magazines Scientific , reports ,....)	1- Charles K. Alexander, Mathew NO Sadiku "Fundamental of electric circuit",3rd. 2- Road M. Rasheed, “Lectures electric circuits”, Part2.
for - the reviewer Electronic, Sites The Internet	Technical Institute website / Mosul

13.plan development The decision Academic
1- development Curricula 2- development Laboratories 3- Courses education continuous 4- an offer films Scientific 5- stay Visits Scientific 6- to organize Episodes Academic

1. Educational institution	Northern Technical University
2. Academic department/center	Department of Electronic and Communication Technologies / Mosul Technical Institute
3. Course name/code	**Medical Physics ETMI109**
4. Available forms of attendance	First-stage students
5. Semester/year	second semester / 2024
6. Number of study hours (total)	Two hours per week for 15 weeks (course)
7. Date this description was prepared	9/1/2024

• 8. Course objectives

1 .Foundational Knowledge: Understanding the fundamental principles and concepts of medical chemistry.

2 .Experimental Competence: Developing the skills and techniques necessary to conduct chemical experiments safely and efficiently.

3 .Data Analysis: Acquiring the ability to analyze and interpret chemical data, and to draw meaningful conclusions from experimental results.

4 .Practical Applications: Understanding the applications of chemistry in various fields, including medicine, industry, and everyday life.

5 .Critical Thinking: Developing critical thinking and problem-solving skills through the study of chemical concepts and reactions.

6. Teamwork: Fostering effective collaboration and communication skills through group work and experimental projects.

9. Course Outcomes and Teaching and Learning Methods

Learning and Teaching Method: Discussion Method, Lecture Method

Evaluation Method: Daily Exams, Term Exams, Final Exam

A- Cognitive objectives

1 .Chemical Reactions: Students will understand the types and mechanisms of chemical reactions.

2 .Electrochemistry in Medical Devices: Students will comprehend the application of electrochemistry in medical devices.

3 .Fundamental Chemical Concepts: Students will grasp the fundamental principles of chemistry, including chemical equations and bonding.

4 .Data Analysis: Students will develop the ability to collect, analyze, and interpret chemical data.

5. Applications of Chemistry: Students will understand the practical applications of chemistry in various fields, including medicine, agriculture, and industry.

B- Course specific skill objectives

1 .Laboratory Skills: Students will learn to use laboratory equipment and techniques safely and effectively.

2 .Experimental Design: Students will acquire the ability to design and conduct chemical experiments.

3 .Scientific Reporting: Students will learn to communicate scientific findings clearly and professionally.

4 .Problem-Solving Skills: Students will develop the ability to solve complex chemical problems.

5. Critical Thinking: Students will enhance their critical thinking skills through the analysis of chemical reactions and processes.

C- Emotional and value-based objectives

C1 .Appreciation of Chemistry's Role: Students will understand and appreciate the significance of chemistry in daily life and its contributions to society.

C2 .Inspiring Passion for Chemistry: Students will develop a deeper interest in chemistry and science through engaging and interactive learning experiences.

C3 .Environmental Awareness: Students will become aware of environmental issues and develop a sense of responsibility towards conservation and sustainability.

C4 .Teamwork and Collaboration: Students will enhance their teamwork and collaboration skills through group projects and activities.

C5 .Ethical Conduct in Science: Students will understand the importance of ethics and integrity in scientific research and experimentation, and apply these principles in their work.

D- General and transferable qualification skills (other skills related to employability and personal development).

D-1 Enabling students to conduct job interviews and demonstrate the required engineer personality in the workplace

D-2 Enabling students to make the right decision as quickly as possible to manage work matters in the workplace

D-3 Enabling students to pass professional tests organized by local/regional/international bodies

D-4 Enabling students to develop themselves continuously after graduation to keep pace with the development taking place in the field of specialization

12.structure The decision / Level the first					
The week	**Hours**	**Required learning outcomes**	**Unit name/topic**	**Teaching method**	**Evaluation method**
First	2 hours	Understanding Medical Chemistry and Its Importance:	:Analytical Chemistry	Discussion method, lecture method	Daily Oral Test
Second	2 hours	Understanding Medical Chemistry and Its Importance:	:Medical Chemistry	Discussion method, lecture method	Daily Oral Test
Third	2 hours	- Understanding the First Law of Thermodynamics	Thermodynamics	Discussion method, lecture method	Daily Oral Test
Fourth	2 hours	- Understanding Reactions and Their Types:	:Reversible and Irreversible Reactions	Discussion method, lecture method	Daily Oral Test
Fifth	2 hours	- Understanding the SECOND Law of Thermodynamics	:Second Law of Thermodynamics	Discussion method, lecture method	Daily Oral Test
Sixth	2 hours	- Understanding Carnot Cycle and Entropy:	:Carnot Cycle	Discussion method, lecture method	Daily Oral Test
Seventh	2 hours	- Learning About Electrochemical Cells and Their Type	:Electrochemistry	Discussion method, lecture method	Daily Oral Test
Eighth	2 hours	Absorption of Electromagnetic Radiation Spectrum:	Absorption of Electromagnetic Radiation Spectrum:	Discussion method, lecture method	Daily Oral Test
Ninth	2 hours	Beer-Lambert Law:	- Beer-Lambert Law:	Discussion method, lecture method	Daily Oral Test
Tenth	2 hours	Components of Photovoltaic Devices:	- Components of Photovoltaic Devices:	Discussion method, lecture method	Daily Oral Test
Eleventh	2 hours	Statistical Error Analysis:	- Statistical Error Analysis:	Discussion method,	Daily Oral Test

				lecture method	
Twelfth	2 hours	Standard Deviation and Its Types:	- Standard Deviation and Its Types:	Discussion method, lecture method	Daily Oral Test
Thirteenth	2 hours	Applications of Statistical Error Analysis:	- Applications of Statistical Error Analysis:	Discussion method, lecture method	Daily Oral Test
Fourteenth	2 hours	Learning About Nernst Equation and Cell Potential:	Nernst Equation	Discussion method, lecture method	Daily Oral Test
Fifteenth	2 hours	Learning About Electromotive Force (EMF):	. Electromotive Force (EMF):	Discussion method, lecture method	Daily Oral Test

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

13. Curriculum Development Plan
1. Curriculum Development 2. Laboratory Development 3. Continuing Education Courses 4. Showing Scientific Films 5. Holding Scientific Visits 6. Organizing Study Groups

1. Educational institution	Northern Technical University
2. Academic department/center	Department of Electronic and Communication Technologies / Mosul Technical Institute
3. Course name/code	**Analogue Electronic Principles ETMI102**
4. Available forms of attendance	First-stage students
5. Semester/year	First semester / 2024 AD
6. Number of study hours (total)	Two hours per week for 15 weeks (course)
7. Date this description was prepared	9/1/2024

• 8. Course objectives

Understand the energy level and atomic structure through the energy band theory of materials.

- Basic concept and internal structure of materials such as metals, insulators and semiconductors.
- Understand electrical conductivity and properties of all materials such as conductivity, mobility, and energy distribution of electrons.

- Understand the work of diode, its properties and applications.
- Identify the types of rectifiers and their work.
- Identify filters and their work.
- Identify Zener diode and its applications

9. Course Outcomes and Teaching and Learning Methods

Learning and Teaching Method: Discussion Method, Lecture Method

Evaluation Method: Daily Exams, Term Exams, Final Exam

A- Cognitive objectives

A1- Enable students to understand the principles and theoretical foundations of electronics and communications.

A2- Develop analysis and design skills for complex communication and electronics systems.

A3- Identify the latest technologies and innovations in the field of electronics and communications.

A4- Apply the acquired theories to real projects and industrial problems.

A5- Enhance research and development skills to provide new and effective solutions in the field of electronics and communications.

B- Course specific skill objectives

B1- Stimulating curiosity and interest in the field and understanding its importance in daily life and - technological development.

B2- Building students' confidence in their ability to understand, analyze and solve complex problems. -

B3- Instilling the values of accuracy, perseverance in work and creativity in solving problems. -

B4- Encouraging students to work in a team spirit and cooperate with others to achieve common goals. -

C- Emotional and value-based objectives

C1- Enhancing appreciation for the field of electronic and communications technologies and their role in developing technology and society.

C2- Instilling values of commitment and discipline in academic work and research projects.

C3- Encouraging teamwork, team spirit and cooperation among students and colleagues.

C4- Enhancing understanding of professional ethics and the importance of integrity and transparency in research and development.

D- General and transferable qualification skills (other skills related to employability and personal development).

D1- The ability to analyze electronic circuits and communications systems and understand their behavior.

D2- Design electronic systems and develop innovative solutions to communication problems.

D3- Use specialized tools and software in the field of electronics and communications to conduct experiments and develop applications.

D4- Conduct scientific research and laboratory experiments to provide solutions and develop new theories.

12.structure The decision / Level the first					
The week	**Hours**	**Required learning outcomes**	**Unit name/topic**	**Teaching method**	**Evaluation method**
First	2 hours		Introduction to the course, learning objectives, course content	Discussion method, lecture method	Daily Oral Test
Second	2 hours		Semiconductor theory- Structure of the atom- Energy levels- Crystals Conductivity in crystals- Current gap- How the gap moves	Discussion method, lecture method	Daily Oral Test
Third	2 hours		Doping_ P-type positive crystal- N-type positive crystal- Current of electrons and current of gaps- Total resistance	Discussion method, lecture method	Daily Oral Test
Fourth	2 hours		Semiconductor diodes- Formation of the evacuation region- Barrier voltage- Energy hill- Thermal effects- Biased diode- Forward bias- Reverse bias- Characteristic curves in the forward and reverse directions- Evanescent crossing current- Minority carrier current- Permissive leakage current- Breakdown voltage- Breakdown voltage- Maximum forward current- Maximum reverse current- Equivalent circuit of the diode	Discussion method, lecture method	Daily Oral Test
Fifth	2 hours		Diode as a current rectifier- Half-wave rectifier- Value- Continuous value of current and its calculation- Effective- Output frequency	Discussion method, lecture method	Daily Oral Test
Sixth	2 hours		Full-wave rectifier- Using a middle-branch transformer- Bridge rectifier- Calculating continuous and effective values of voltages and currents- Output frequency- Comparison between half-wave and full-wave rectifier- Comparison between Full wave rectifiers	Discussion method, lecture method	Daily Oral Test

Seventh	2 hours		Filters - Capacitor filtering - RC - LC filters - Output voltages - Ripple - Voltage multipliers - Trimming circuits - Positive trimming - Negative trimming - Complex trimming - Atom to atom detector - Positive and negative binding posts	Discussion method, lecture method	Daily Oral Test
Eighth	2 hours		Solving various examples of rectifiers and filters	Discussion method, lecture method	Daily Oral Test
Ninth	2 hours		Zener diode - Its structure - Symbol - Forward and reverse properties - Breakdown voltages - Zener impedance - Power tolerance - Temperature effects - Zener approximation	Discussion method, lecture method	Daily Oral Test
Tenth	2 hours		DC voltage regulation - DC voltage source circuit - Variable capacitor diode - and its applications - Light emitting diode - Photodiode - Variable capacitance diode	Discussion method, lecture method	Daily Oral Test
Eleventh	2 hours		Introduction to the course, learning objectives, course content	Discussion method, lecture method	Daily Oral Test
Twelfth	2 hours		Semiconductor theory- Structure of the atom- Energy levels- Crystals Conductivity in crystals- Current gap- How the gap moves	Discussion method, lecture method	Daily Oral Test
Thirteenth	2 hours		Doping_ P-type positive crystal- N-type positive crystal- Current of electrons and current of gaps- Total resistance	Discussion method, lecture method	Daily Oral Test
Fourteenth	2 hours		Semiconductor diodes- Formation of the evacuation region- Barrier voltage- Energy hill- Thermal effects- Biased diode- Forward bias- Reverse bias- Characteristic curves in the forward and reverse directions- Evanescent crossing current- Minority carrier current- Permissive leakage current- Breakdown	Discussion method, lecture method	Daily Oral Test

			voltage- Breakdown voltage- Maximum forward current- Maximum reverse current- Equivalent circuit of the diode		
Fifteenth	2 hours		Diode as a current rectifier- Half-wave rectifier- Value- Continuous value of current and its calculation- Effective- Output frequency	Discussion method, lecture method	Daily Oral Test

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

13. Curriculum Development Plan

1. Curriculum Development
2. Laboratory Development
3. Continuing Education Courses
4. Showing Scientific Films
5. Holding Scientific Visits
6. Organizing Study Groups

1. Educational institution	Northern Technical University
2. Academic department/center	Department of Electronic and Communication Technologies / Mosul Technical Institute
3. Course name/code	**Advanced Electronic Circuits ETMI207**
4. Available forms of attendance	First-stage students
5. Semester/year	First semester / 2024 AD
6. Number of study hours (total)	Two hours per week for 15 weeks (course)
7. Date this description was prepared	9/1/2024

• 8. Course objectives

1. Developing the skills of solving electronic circuit problems through all passive and active electronic components, transistors, and integrated circuits.
2. Understanding the basic structure of the transistor through graphical analysis of transistors and their biasing.
3. To understand the analysis of the load line, the transistor at the operating point, and the classification amplification.
4. Understanding the H coefficients.
5. Identifying the types of bias EFT and the equivalent circuit and its use

9. Course Outcomes and Teaching and Learning Methods

Learning and Teaching Method: Discussion Method, Lecture Method
Evaluation Method: Daily Exams, Term Exams, Final Exam

A- Cognitive objectives

A1- Enable students to understand the principles and theoretical foundations of electronics and communications.
A2- Develop analysis and design skills for complex communication and electronics systems.
A3- Identify the latest technologies and innovations in the field of electronics and communications.
A4- Apply the acquired theories to real projects and industrial problems.
A5- Enhance research and development skills to provide new and effective solutions in the field of electronics and communications.

B- Course specific skill objectives

- B1- Arouse curiosity and interest in the field and understand its importance in daily life and technological development.
- B2- Build students' confidence in their ability to understand, analyze and solve complex problems.
- B3- Instill the values of accuracy and perseverance in work and creativity in solving problems.
- B4- Encourage students to work in a team spirit and cooperate with others to achieve common goals.

C- Emotional and value-based objectives

C- EC1- Enhance appreciation for the field of electronic and communications technologies and their role in developing technology and society.
C2- Instilling the values of commitment and discipline in academic work and research projects.
C3- Encouraging teamwork, team spirit and cooperation among students and colleagues.
C4- Enhancing understanding of professional ethics and the importance of integrity and transparency in research and development.

D- General and transferable qualification skills (other skills related to employability and personal development).

D1- The ability to analyze electronic circuits and communication systems and understand their behavior.
D2- Design electronic systems and develop innovative solutions to communication problems.
D3- Using specialized tools and software in the field of electronics and communications to conduct experiments and develop applications.
D4- Conducting scientific research and laboratory experiments to provide solutions and develop new theories.

12.structure The decision / Level the first					
The week	**Hours**	**Required learning outcomes**	**Unit name/topic**	**Teaching method**	**Evaluation method**
First	2 hours		Introduction to the course, learning objectives, course content	Discussion method, lecture method	Daily Oral Test
Second Third	2 hours		Bipolar transistor - structure - symbol - regions - definition (□dc) - definition) (□dc - relationship between them - definition of important regions on the characteristic curves - Transistor bias circuits - Emitter bias - Collector bias - Collector bias - Approximation in the transistor and the equivalent circuit	Discussion method, lecture method	Daily Oral Test
	2 hours			Discussion method, lecture method	Daily Oral Test
Fourth	2 hours		Transistor characteristic curves - working regions	Discussion method, lecture method	Daily Oral Test
Fifth	2 hours		Transistor bias circuits - Base bias - Emitter bias	Discussion method, lecture method	Daily Oral Test
Sixth	2 hours		Continuous equivalent circuit of the transistor - Continuous load line	Discussion method, lecture method	Daily Oral Test
Seventh Eighth	2 hours		Use of transistor in small signal amplification - AC equivalent circuit - Current gain - Voltage gain - Ideal approximation - Hybrid constants -	Discussion method, lecture method	Daily Oral Test
	2 hours			Discussion method, lecture method	Daily Oral Test
Ninth	2 hours		Equivalent circuit using h coefficients - Voltage gain - Current gain - Power gain - Input and output resistances - Small signal amplifiers.	Discussion method, lecture method	Daily Oral Test
Tenth	2 hours		Use of transistor in voltage regulation - Series regulator - Parallel regulator - DC voltage source circuit	Discussion method, lecture method	Daily Oral Test
Eleventh Twelfth	2 hours		Field effect transistor structure MOSFET curve - E MOSFET characteristic	Discussion method, lecture method	Daily Oral Test

	2 hours		curve Comparison between JFET, BJT	Discussion method, lecture method	Daily Oral Test
Thirteenth	2 hours		Solving various examples of types of transistors	Discussion method, lecture method	Daily Oral Test
Fourteenth	2 hours		Operational amplifier 741 symbol connection terminals and its use	Discussion method, lecture method	Daily Oral Test
Fifteenth	2 hours		FET bias circuits - Equivalent circuit - Its use - Types of FET	Discussion method, lecture method	Daily Oral Test

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

13. Curriculum Development Plan
1. Curriculum Development 2. Laboratory Development 3. Continuing Education Courses 4. Showing Scientific Films 5. Holding Scientific Visits 6. Organizing Study Groups

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Department of Electronic and Communication Technologies / Mosul Technical Institute
3. Course title/code	**Crimes of the Baath regime in Iraq NTU203**
4. Programme (s) to which it contributes	Technical diploma
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	8 / 1 / 2024
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/ Level the second

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 -The concept of crimes and their divisions -Definition of crime linguistically and idiomatically	Knowledge and practical application	theoretical	Tests & Discussion
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

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Northern Technical University
2. University/ Department	Department of Electronic and Communication Technologies / Mosul Technical Institute
3. Course title/code	**Professional Ethics NTU204**
4. programmer (s) to which it contributes	Technical Diploma
5. Modes of Attendance offered	1 -Weekly lesson schedule (theoretical(2- Discussions
6. Semester/Year	Second semester/second level
7. Number of hours tuition (total)	30 hours (the number of theoretical hours during the 15 weeks)
8. Date of production/revision of this specification	5/1/2024
.Course objectives	
-Teaching students that their commitment to the ethics of their professions is an integral part of the correct practice of them, and this commitment is their duty toward -Teaching the professional ethics course is considered the cornerstone of preparing future generations professionally and ethically. -Teaching a professional ethics course to institute students represents the right beginning for any society that seeks to raise the level of ethical practice among professionals.	
.Course outcomes and teaching, learning and evaluation methods	
A- Cognitive objectives a1- Identify the principles of ethical analysis and thinking In various professional situations. a2- Know the difference between Work and profession a3-.RecognitionPatient rights	
B - The skills objectives of the course. B1 –Brainstorming skill inside the hall. B2 -Give examples and modern applications to enhance understanding.	
Teaching and learning methods	
Traditional lecture, report writing, discussion	
Evaluation methods	
Daily written and oral tests, semester and final exams, commitment 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 to evaluate himself in light of Teacher's answers (analytical and deductive questions).	

C- Emotional and value goals C1-The student understands the meaning of the basic terms of the curriculum. C2- That the student understands Characteristics and duties of a medical technician. C3- That The student distinguishes the importance of ethics for the individual and society. C4- That The student compares the concept of work, profession and craft.
Teaching and learning methods
Traditional lecture, feedback, deductive and analytical thinking questions.
Evaluation methods
Written tests, semester and final exams, daily tests, and commitments to assignments such as making reports and then discussing the reports, attendance and commitment.
D - Transferable general and qualifying skills (other skills related to employability and personal development). D1- Skills of modern interactive teaching methods among students. D2- Scientific competition skills among students through asking questions.

11. Course structure\ Level the second

week	hours	Required learning outcomes	Name of the unit/topic	Teaching method	Evaluation method
1	2	identification requester Concept Moral	Moral.	Theoretical lectures Group discussions	Duties Quizzes Reports
2	2	Define the student the difference between work and profession	Work and profession.	Theoretical lectures Group discussions	Duties Quizzes Reports
3	2	The student understands the nature of professional ethics	Professional ethics.	Theoretical lectures Group discussions	Duties Quizzes Reports
45&	2	Introducing the student to the values and ethics of the profession	Values and professional ethics.	Theoretical lectures Group discussions	Duties Quizzes Reports
6&7	2	Introducing the student to patterns of unethical behavior Administrative corruption + bribery + fraud at work	Patterns of unethical behavior In the profession.	Theoretical lectures Group discussions	Duties Quizzes Reports
8	2	Understand the means of consolidating values	Means and methods of consolidating professional ethics.	Theoretical lectures Group discussions	Duties Quizzes Reports
9	2	Introducing the student to the duties of medical staff	Ethics of practicing medical professions	Theoretical lectures	Duties Quizzes

			Characteristics and duties of a medical technician.	Group discussions	Reports
10	2	Introducing the student to patient rights	1.Patient rights.	Theoretical lectures Group discussions	Duties Quizzes Reports
11&12	2	Introducing the student to the role of the medical technician in society	2.The medical technician's relationship with society and his responsibility towards the environment and public safety.	Theoretical lectures Group discussions	Duties Quizzes Reports
13&14	2	Clarifying the medical technician's relationship with his co-workers and his subordinates	3.Professional relations (the medical technician's relationship with his colleagues in the health institution.	Theoretical lectures Group discussions	Duties Quizzes Reports
15	2	Understand and explain the ethics of teaching and learning to patients	4.Ethics of teaching and learning for patients.	Theoretical lectures Group discussions	Duties

12.Infrastructure

Unified curriculum for technical universities in Iraq	1- Required prescribed books
● Abu Al-Khair, Muhammad Saeed (B.T): Guide to Professional Ethics, Faculty of Arts, Zagazig University. ● Hassan, Abdul Mahdi Abdul Reda (bt): Rules of professional ethics for nurses and midwives in Iraq, website. www.uobabylon.edu.iq/eprints/pubdoc_10_6984_150.doc ● Al-Hourani, Ghaleb Saleh Watanash, Salama Youssef (2007): Academic ethics for university professors**fromFaculty members' point of view University of Jordan**Studies Journal, Educational Sciences, Vol.34), Issue (2), Jordan. **Rabhi, Israa (2018): The concept of bribery,**Internet site.https://mawdoo3.com ● Mohamed Ahmed (2018): What is the difference between a gift and a bribe?https://mawdoo3.com/ ● National Center for Developing Faculty and Leadership Capabilities (2011): Ethics of Scientific Research, Program Series, Egypt. ● Mishal, Talal (2018): What is the importance of ethics, website. https://mawdoo3.com/	2- Main references (sources)

Al-Mashharawi, Ahmed Hussein (2014):The role of professional ethics in promoting social responsibility in Palestinian government hospitals (Al-Shifa Medical Complex as an example), Master's thesis in the program • Saudi Commission for Health Specialties (2012): Health Practitioner Ethics, 3rd edition, p. 44. • Quality Assurance Unit (2017): Guide to Professional Ethics, Faculty of Arabic Language, Al-Azhar University, Cairo. • Iraqi Ministry of Health (2018): Code of Medical Research Ethics, National Center for Training and Human Development. Iraqi Ministry of Health (2017): Principles of medical ethics in Iraqi health institutions.	
	Recommended books and references (scientific journals, reports,...)
Modern sources via the Internet	B - Electronic references, Internet sites...

13.Course development plan
-Access to modern scientific literature -Periodic review of the course

1. Educational institution	the university Technology Northern
2. Academic department/center	Department of Electronic and Communication Technologies / Mosul Technical Institute
3. Course name/code	**Control systems ETMI212**
4. Available forms of attendance	theoretical + Practical
5. Semester/year	courses
6. Number of study hours (total)	4 hours / week x decision =60 hours (theoretical And my work)
7. Date this description was prepared	7/1/2024

1. Course Objectives

• Understand the principles of electrical control in medical devices.
• Distinguish between open-circuit and closed-circuit control circuits.
• Examine control components of both open and closed-circuit types.
• Design and analyze control systems.

10. Course Outcomes, Teaching, Learning and Evaluation Methods

A- Cognitive Objectives

After completing the lesson (lecture) the student will be able to:
A1- Know the technology of automatic control systems.
A2- Distinguish between open-loop and closed-loop control systems.
A3- Know the types of industrial controllers.
A4- Evaluate the performance of the control system**.**

B - Course specific skill objectives.

B1- Knowledge of automatic control systems technology.
B2- Distinguishing between open-loop and closed-loop control systems.
B3- Knowledge of types of industrial controllers.
B4- Evaluation of the performance of the control system.

Teaching and learning methods

1- Theoretical lectures
-2 Scientific discussion in classrooms
-3 Small group method
-4 Conducting practical experiments in laboratories
-5 Study seminars and presentation of the latest scientific developments globally by students
6- Scientific films and other means of clarification
7- Methodological training
8- Summer training

Evaluation Methods

- Oral and written tests
- Midterm and final exams
- Practical reports
- Homework
- Daily assessment

C- Emotional and value-based objectives

C1- He has academic and technical information, experience and skill in the field of control circuits and control systems of various types.
C2- He can keep pace with the rapid development in the field of modern control devices
C3- He can manage, prepare and implement periodic programs for maintenance and continuity of control devices..

Teaching and learning methods

- Theoretical lectures
- Scientific discussion in classrooms
- Small group method
- Conducting practical experiments in laboratories
- Study seminars and presentation of the latest scientific developments globally by students
- Scientific films and other means of clarification
- Methodological training
- Summer training

Evaluation Methods

- Oral and written tests
- Midterm and final exams
- Practical reports
- Homework
- Daily assessment

D- General and transferable skills (other skills related to employability and personal development).
D1- Gaining the experiences that qualify them to deal with the necessities of life, including experience in the field of maintenance of control devices.
D2- Gaining the experiences that qualify them to deal with control circuits.
D3- Gaining the experiences in reverse engineering electronic maps for control devices.
D4- Gaining the skills necessary to identify and repair faults and maintain various control devices

12. structure The decision / Level the second

The week	Hours	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
the first	2	Distinguish between open-loop and closed-loop control system	Introduction and knowledge about control engineering, open circuit and closed circuit	Theoretical lectures, scientific discussions, screening of scientific films, the latest developments and means of clarification	**Exams Daily Short Duties Home, Exams Quarterly And final**
the second	2	Knowing the components of the receiver and how it works	Industrial control of electric motors (receiver)	=	=
the third	2	Knowing what a relay is, its types, and how to connect it to motors to protect it	Use of relays in controlling motor operation	Theoretical lectures, scientific discussions, screening of scientific films, the latest developments and means of clarification	**Exams Daily Short Duties Home, Exams Quarterly And final**
Fourth	2	Knowing the structure of a single-phase motor and building the power circuit and control circuit for a single-phase and three-phase motor to achieve the motor start and stop	Control system for single and three phase motor	Theoretical lectures and scientific discussion Showing scientific films, the latest developments	**Exams Daily Short Duties Home, Exams Quarterly And final**

				and means of clarification	
Fifth	2	Know the purpose of the block diagram and the theories used to simplify simple systems.	Transfer function - Block diagrams - Algebra and simplification	=	=
Sixth	2	Learn Mason's Rule and how to simplify a complex control system using Mason's Rule,	Signal Flow Graph, and Mason's Rule.	=	=
Seventh	2	The purpose of using the Laplace transform and how to use it	Math Review - Laplace Transform	=	=
eighth	2	Ability to convert sine and exponential functions to algebraic functions	Solving linear differential equations using Laplace's method		
Ninth	2	Draw the s-plane by identifying the poles and zeros to determine the stability of the system	Identify the s-plane Identify the poles and zeros of s-plane control systems Determine the stability level		
tenth	2	Distinguish between types of input signals (step function, slope function, and acceleration function)	Types of input signals		
eleventh	2	How to be able to classify control systems by type and rank of the system	Classification of control systems (type and rank of the system))	Theoretical lectures and scientific discussion Showing scientific films, the latest developments and means of clarification	**Exams Daily Short Duties Home, Exams Quarterly And final**
twelfth	2	Finding the steady-state error of a	Steady-state error	=	=

		different input signal by finding the error coefficients			
thirteenth	2	Finding the transient response of the system by the denominator of the transfer function	Transient response of second-order systems	=	=
fourteenth	2	Analysis of the control system by finding the time specifications of the system (delay time, peak time, rise time, maximum overshoot, dwell time)	Time response of a second-order system - factors determining stability	=	=
fifteenth	2	Drawing a closed-loop control system using proportional, differential and integral controllers and knowing the operating principle of each controller.	Electronic controllers - their types - proportional, differential and integral.		

13. Structure Infrastructure

The Control Book by Assistant Professor Diaa Mahdi Faris	1- Books The reporter Required
Electrical control technology book233	2- the reviewer Home (Sources)
	A Books References that Recommended With it (Magazines Scientific , reports ,....)
Technical Institute website / Mosul	for - the reviewer Electronic, Sites The Internet ....

14. Plan Curriculum Development

7- Curriculum Development
8- Laboratories Development

9- Continuing Education Courses
10- Showing Scientific Films
11- Holding Scientific Visits
12- Organizing Study Groups