

**Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation Dept.**



Academic Program and Course Description Guide

2025

Academic Program Description Form

University Name: Northern Technical University

Faculty/Institute: . Al-dour Technical Institute.

Scientific Department: Medical Instruments Techniques

Academic or Professional Program Name: Technical Diploma in Medical Instruments Techniques

Final Certificate Name: Technical Diploma in Medical Instruments Techniques

Academic System: Curriculum system

Description Preparation Date:1/9/2025

File Completion Date: 15/9/2025

Signature:



Head of Department

Name: Assist. Lec. Nida Muhsin Ali

Date:

Signature:



Scientific Associate

Name: Proff. Dr. Hanan Shihab Ahmad

Date:

The file is checked by: Assist. Lec. Hayder Ali Muhsin

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department

Date:

Signature:



Dean's endorsement

Prof. Dr. Maha Elttayef Jasim

1. Program Vision

Providing knowledge of electronic technologies, acquiring technical skills in operating and maintaining electronic devices, and developing innovative technical solutions that promote sustainable development and meet the changing needs of the labor market.

2. Program Mission

Preparing intermediate technical cadres with specialized technical knowledge and skills in the field of electronics to meet the needs of the labor market, with a focus on developing technical competencies through quality applied education, practical training, and innovation to serve the local and regional community.

3. Program Objectives

1. Implementing quality standards in education and training to ensure distinguished educational outcomes.
2. Developing curricula and academic programs in line with scientific and technological developments in the field of electronic technologies.
3. Supporting and encouraging scientific research that contributes to finding innovative technical solutions to industrial and societal problems.
4. Building sustainable cooperative relationships with the industrial sector and local institutions to provide training and employment opportunities and support the professional development of graduates.
5. Encouraging students to implement innovative technology projects that contribute to improving the quality of life and developing local industries.
6. Providing technical and technological consultations to various institutions and contributing to enhancing technical awareness in society.

4. Program Accreditation
No accreditation program

5. Other external influences
1. Linking the program to the labor market or the community 2. Financial, logistical , or training support 3. Facilitating employment and practical training 4. Ongoing program guidance

6. Program Structure				
Program Structure	Number of Curriculums	Credit hours	Percentage	Reviews*
Institution Requirements	10	20	22%	9 basic, 1 optional
College Requirements	3	7	7.7%	3 basic
Department Requirements	25	64	70.3%	24 basic, 1 optional
Summer Training	Completed	-----	----	
Other	None			

7- Program Description				
Year / Level	Code of the Curriculum	Name of the Curriculum	Approved hours	
			Theoretical	Practical
First Level	NTU 101	English Language	2	-
	NTU 102	Computer	1	1
	TIDO 100	Mathematics Foundation	2	-
	TIDO 101	Mechanical Workshop	-	2
	MDDI 100	DC Electrical circuits	2	2
	MDDI 101	Principles of Electronics	2	2
	MDDI 102	Principles of digital circuits	2	2
	MDDI 104	Electrical Workshop	-	2
	MDDI 103	Physiology	2	-
	MDDI 110	Engineering Drawing	-	2
	NTU 103	Arabic Language	2	-
	NTU 104	Sports	1	1
	NTU 100	Democracy and Human Rights	2	-
	TIDO 102	Differentiation and Integration	2	-
	MDDI 105	Electrical Drawing	-	2
	MDDI 106	Electronic workshop	-	2
	MDDI 107	AC electrical circuits	2	2
	MDDI108	Electronics	2	2
	MDDI109	Digital circuits applications	2	2
Second Level	NTU 203	Crimes of Al-Baath regime in Iraq	2	-
	NTU 200	English language	2	-
	NTU 201	Computer	1	1
	MDDI 201	Electronic Circuit 1	2	2
	MDDI 202	Microcomputer 1	2	2
	MDDI 203	Electronical Medical Instruments 1	2	2
	MDDI 204	Medical Instruments Maintenance workshop 1	-	2
	MDDI 205	Project 1	-	2
	MDDI 206	Electro-mechanical Medical Instruments	2	2
	MDDI 212	Control	2	2

	MDDI 214	Renewable energy systems	1	2
	NTU 202	Arabic Language	2	-
	NTU 204	Professional Ethics	2	-
	MDDI 200	Measurements Devices	2	2
	MDDI 207	Electronic Circuit 2	2	2
	MDDI 208	Microcomputer 2	2	2
	MDDI 209	Electronical Medical Instruments 2	2	2
	MDDI 210	Medical Instruments Maintenance workshop 2	-	2
	MDDI 211	Project 2	-	2
	MDDI 213	Programmable (PLC) logic controller	1	2

8- Expected learning outcomes of the program

Knowledge

A1- Preparing and graduating a technical cadre that meets the basic technical and cognitive requirements to become a high-quality technical resource in the field of medical devices.

A2- The ability to classify medical devices, their operation, diagnose their risks, and understand their risks.

A3- Collaborating with physicians and healthcare institutions to provide the necessary technical support to operate medical devices properly and effectively.

A4- The ability to write technical reports on medical device testing results and the ability to extract conclusions and their implications.

Skills

B1 - Install and operate various electronic and electromechanical medical devices, both diagnostic and therapeutic.

B2 - Schedule and program periodic maintenance work.

B3 - Contribute to and supervise the maintenance, upkeep, and calibration of various medical devices.

B4 - Design, develop, and find replacement parts for some defective medical device units.

Ethics

A1- Compliance with health and technical standards and regulations applied in the medical process, ensuring patient safety and treatment effectiveness.

A2- The ability to develop oneself and update knowledge in the field of specialization over the long term.

A3- Optimum use of all possible means to keep pace with the latest developments in the specialty.

A4- Continuous research and development in the field of medical device engineering technology, improving the performance, efficiency, and overall safety of medical devices.

9. Teaching and Learning Strategies

((Theoretical lectures / discussion and dialogue / practical lectures / field visits / discussion circles / laboratories / office activities / solving examples / graduation project / summer training))

10. Evaluation methods

((Oral and written exams/observation and cumulative record))

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Lecturer	Information technology	Information systems			1	

Assistant Lecturer	Life Sciences	Life Sciences			1	
Assistant Lecturer	History	History			1	
Assistant Lecturer	Civil Engineering	Project Management			1	

Professional Development
Mentoring new faculty members
Directing new faculty members to follow up on annual updates to the study plan and the necessity of updating the curricula in line with the plan announced by the academic department.
Professional development of faculty members
Conducting field visits to the public and private sectors and universities within the specialization to review field developments in the field of specialization.
12.Acceptance Criterion
The admission criteria for morning studies are within the central admission plan, which is approved by the Ministry of Higher Education and Scientific Research.
13.The most important sources of information about the program
The programmers and resources are approved by the university's sectorial committees and are updated periodically through the annual meetings of the relevant committees.
14.Program Development Plan
Using new concepts and modern methods in the maintenance and calibration of various medical devices through the participation of specialized professors in the scientific department in scientific workshops, seminars, and twinning work with the hospitals specializing

	MDDI102	Digital Circuit Principles	Basic	X	X	X	X	X	X	X		X	X	X	X
	MDDI103	Physiology	Basic	X	X	X		X	X	X		X	X	X	X
	MDDI104	Electrical Workshop	Basic	X	X	X	X	X	X	X		X	X	X	
	MDDI105	Electrical drawing	Basic	X	X	X		X		X	X	X	X	X	X
	MDDI106	Electronics Workshop	Basic	X	X	X	X	X	X	X	X	X	X	X	
	MDDI107	AC Electrical Circuit	Basic	X	X	X		X	X	X	X	X	X	X	
	MDDI108	Electronic	Basic	X	X	X		X	X	X	X	X	X	X	
	MDDI109	Digital Circuit	Basic	X	X	X		X	X	X		X	X		
	MDDI110	Engineering Drawing	Basic												
	NTU200	English Language	Basic	X	X	X		X	X	X		X	X	X	X
	NTU201	Computer	Basic	X	X	X		X	X	X		X	X	X	X
	NTU202	Arabic Language	Basic		X	X		X	X	X	X	X	X		X
Sconed level	NTU203	The Crimes Of The Baath Regime In Iraq	Basic		X			X	X	X		X	X	X	
	NTU204	Professional Ethics	Basic		X	X	X		X	X	X	X	X		X
	MDDI200	Measurements Devices	Basic	X	X	X	X	X	X	X		X	X	X	

	MDDI201	Electronic Circuit 1	Basic	X	X	X		X	X	X		X	X	X	
	MDDI202	Microcomputer 1	Basic	X	X	X		X	X	X		X	X	X	
	MDDI203	Electronical Medical Instruments 1	Basic	X	X	X		X	X	X		X	X	X	
	MDDI204	Medical Instruments Maintenance workshop 1	Basic	X	X	X		X	X	X		X	X	X	
	MDDI205	Project 1	Basic	X	X	X	X	X	X	X	X	X	X	X	
	MDDI206	Electro- mechanical Medical Instruments	Basic	X	X	X	X	X	X	X		X	X	X	
	MDDI207	Electronic Circuit 2	Basic	X	X	X		X	X	X		X	X	X	X
	MDDI208	Microcomputer 2	Basic	X	X	X		X	X	X		X	X	X	X
	MDDI209	Electronica Medical Instruments 2	Basic	X	X	X		X	X	X		X	X	X	X
	MDDI210	Medical Instruments Maintenance workshop2	Basic	X	X	X		X	X	X	X	X	X	X	X
	MDDI211	Project 2	Basic	X	X	X		X	X	X	X	X	X	X	

	MDDI212	Control	Basic	X	X	X		X	X	X	X	X	X	X	
	MDDI213	Programmable Logic Controller (PLC)	Basic	X	X	X		X	X	X		X	X	X	
	MDDI214	Renewable energy systems	option al	X	X	X		X	X	X		X	X	X	

1- Course Name:
English Language ١
2- Course code
NTU101
3- Semester/Year
First / ٢٠٢٥-٢٠٢٦
4- Date the description was prepared
٢٠٢٥/٩/١٥
5- Available forms of attendance
mandatory
6- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
7- Name of the course coordinator
Name: Ghufraan Luay Naji :Email addressghofraanluay95@gmail.com
8- Course Objectives=
Learning the basics of the English language, as well as speaking and understanding On the terminology that enables the student .From understanding and knowing the language
9- Teaching and learning strategy
١. Communicative learning . • .It focuses on using language in real-life situations • .Students are encouraged to speak • .Examples: dialogues, role-playing, group discussions • .Using educational tools .٢ • .Videos and audio recordings are displayed on the smart screen • Educational apps that help capture the student's attention and facilitate understanding ٣. Developing curricula that are compatible with the labor market . • Holding seminars and scientific conferences aimed at updating school curricula • Keeping up with scientific developments in the field of specialization

10 - Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit one: hello Am/are/is, my/your This is with practice at work	Knowledge	hours ۲	the first
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit two :your world He/she /they, his/her Questions	Knowledge	hours ۲	the second
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit three: all about	Knowledge	hours ۲	the third
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit four: family and friends Possessive adjectives Possessive's Has/have Adjective+ noun	Knowledge	hours ۲	Fourth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit Five: the way I live Present simple I/you /we /they A and an Adjective +	Knowledge	hours ۲	Fifth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit six: every day Present simple he/she Questions and negatives Adverbs of frequency	Knowledge	hours ۲	Sixth
,Written oral, and	Theoretical lectures presented	Unit seven: my favorite Question	Knowledge	hours ۲	Seventh

written exams	on the smart screen	words Pronouns This and that			
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit eight: where I live There is /are. Prepositions	Knowledge	hours ۲	Eighth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit nine :times past Was /were born Past simple - irregular verbs	Knowledge	hours ۲	Ninth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit ten: we had a great time! Past simple - regular & irregular Question Negatives Ago	Knowledge	hours ۲	tenth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit eleven:Can /can't Adverbs Requests I can do that	Knowledge	hours ۲	eleventh
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit twelve: Please I'd like... Some and any Like and would like and thank you	Knowledge	hours ۲	twelfth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit thirteen: here and now Present continuous Present simple & present continuous	Knowledge	hours ۲	thirteenth
,Written oral, and written exams	Theoretical lectures presented on the smart screen	Unit fourteen: it's time to go! Future plans Revision writing email and informant letter	Knowledge	hours ۲	fourteenth
,Written oral, and	Theoretical lectures	Unit fifteen: revision	Knowledge	hours ۲	fifteenth

written exams	presented on the smart screen				
---------------	-------------------------------	--	--	--	--

11- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

12- Learning and teaching resources

-New Headway Plus / Beginner / John and Liz Soars / Oxford University Press / 2014	Required textbooks (curriculum (books, if available
Available in Free Section and library Institute	Main references (sources)
-New Headway Plus / Beginner / John and Liz Soars / Oxford University Press / 2014	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

1- Course Name
computer
2- Course code
NTU102
3- Semester/Year
First / ٢٠٢٥-٢٠٢٦
4- Date the description was prepared
٢٠٢٥/٩/١٥
5- Available forms of attendance
mandatory
6- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
7- Name of the course coordinator
Name: Nada Mohsen Ali Email : Nida.ali@ntu.edu.iq electronic
8- Course Objectives
1- knowledge How to a job The calculator. 2- identification on tape Tasks. 3- identification on construction Delete Files. 4- identification on requirements Office
9- Teaching and learning strategy
1- . objectives • .Developing basic computer skills •) Understanding computer componentshardware and software (• .Students acquire application skills • .Developing logical thinking and problem-solving skills • .Learn the basics of programming 2- . Methods of teaching and learning • Theoretical lectures, discussion, and dialogue • Practical lectures • Field visits • discussion panels • Office activities 3- .Practical training

- The student learns through direct application on the .computer
 - .Practical activities in each lesson
- 4- .Cooperative learning
- .Divide the students into groups
 - Each group carries out a task (such as preparing a .(report or project
- 5- .Using modern methods
- Educational videos
 - Educational platforms
 - Interactive applications
- 6- .Ongoing assessment
- performance Continuous monitoring of student
 - performance improvement Immediate feedback for

10- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Daily ,monthly and	Theoretical lectures and	introduction on Computer/ Computer System/	Knowledge and Application	٢ hours	the first

practical tests	practical laboratory lectures were displayed on the smart .screen	Technology Information / Types Computers/ units Input/ Unit Treatment Central Units Output/ Memory Home Types of storage Data in Memory/ Factors that Affect on performance computer - identification software And its types Software Systems: Systems Operation/ Languages Programming And organized Programming/ Software Applied.			
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	introduction About Windows / Its Advantages/ Operation Device/ Shutdown Device/ Use mouse/ ingredients Windows screen: toolbar Tasks Icons: and their types(standard) And the general public(	Knowledge and Application	2 hours	the second
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the	Panel Control/ Control surface Office/ a screen Stop/ Colors and lines Windows/ Settings Screen/ Settings colors Screen/ amendment the time Date/ Size Sound/	Knowledge and Application	2 hours	the third

	smart .screen	Change between buttons Mouse/ Control quickly Click Dual/ Change index Mouse/ Control quickly Mouse/ Install Programs and cancellation Install it			
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	Ways employment minimize window Enlargement Window/ Closing Final/ Closure Timer/ Move Window/ Control With capacity Window/ Ways employment Applications and programs	Knowledg e and Applicatio n	٢ hours	The fifth
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	ranking elements Start menu / Delete elements Start menu / Add existing Subsidiary lists Start / Add button new to Start menu	Knowledg e and Applicatio n	٢ hours	Sixth
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the	information order Basic/ Off employment Applications not Recommended discoverer Windows Explorer/ My computer / icon Parts window my computer	Knowledg e and Applicatio n	٢ hours	Seventh

	smart .screen				
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	basket Deleted items) Delete and retrieval and emptying Basket(my document (icon	Knowledg e and Applicatio n	۲ hours	The eighth and ninth
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	identification Files Volumes/ Selection Files Volumes/ Properties Files identification Volumes/ Create Files and volumes/ changing name Files Volumes/ Transfer The file or folder/ copy The file or folder/ search on The file or folder/ Create icon In brief For application or file	Knowledg e and Applicatio n	۲ hours	tenth Eleventh
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	Calculator/ Notepad/ Notebook/ Usage memo To liberate And the creation The file Painter/ Components Screen/ Create Drawings/ Specifications colors Front Background/ Selection size line Brush/ Selection	Knowledg e and Applicatio n	۲ hours	Twelfth and thirteenth

		tool The drawing And selecting/ saving them Drawing/ Making The drawing background surface Office/ Termination The painter Programs EntertainmentMedia player			
,Daily ,monthly and practical tests	Theoretical lectures and practical laboratory lectures were displayed on the smart .screen	Viruses/ Cause Naming/ Definition/ Ways spread Virus/ Symptoms Injury By virus/ methods Protection/ Types viruses crimes Computers/ Theft/ Hackers	Knowledg e and Applicatio n	2 hours	The fourteent h and fifteenth

11- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

12- Learning and teaching resources

https://www.suncam.com/miva/downloads/docs/541.pdf?utm_source=chatgpt.com	Required textbooks curriculum books, if) (available
University bag for the computer curriculum for second-level institute students	Main references (sources)
https://www.scribd.com/document/851473872/Artificial-Intelligence-in-Mechanical-	Recommended books and references (scientific journals (...and reports

Engineering?utm_source=chatgpt.com	
The Internet web sites	Electronic references and websites

1- Course Name
Foundations of Mathematics
2- Course code
TIDO100
3- Semester/Year
First / ٢٠٢٥ – ٢٠٢٦
4- Date the description was prepared
٢٠٢٥/٩/١٥
5- Available forms of attendance
mandatory
6- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
7- Name of the course coordinator
Name: Muhammad Ali Mahmoud :Email mohammed.am@ntu.edu.iq
8- Course Objectives

Teaching students to use mathematics in scientific subjects and
 .developing their skills In his field of expertise

9- Teaching and learning strategy

1. Educational objectives
 - Developing logical and analytical thinking in students
 - ,Understanding basic concepts (sets, relationships (functions, logic
 - The ability to demonstrate and reason
 - Applying mathematics to solving real-world problems
2. .Using assessment teaching methods
 - Short tests
 - Homework
 - Class participation
3. .Gradual education
 - Starting with simple concepts
 - Gradual progression towards complex concepts
4. .Problem-based learning
 - Presenting real or quasi-realistic issues
 - .The student was made to discover the solution himself
5. .Active learning
 - Classroom discussions
 - Ask open-ended questions
 - Involving the student in solving problems

10- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Daily tests monthly tests	Theoretical lectures	– Matrices – Determinants Various Applications	Knowledge	hours ٢	the first
,Daily tests monthly tests	Theoretical lectures	Solving linear – equations Trammer's method	Knowledge	hours ٢	the second

		Applications of – – determinants Finding the value of currents in electrical circuits Multiple			
,Daily tests monthly tests	Theoretical lectures	Vectors – Vector Analysis – Vector Quantities – Standard algebra – vector algebra calculations of – vectors in space phase and directional representation of alternating quantities – phase angle – finding the resultant of vector .quantities	Knowledge	hours ۲	the third
Daily tests Monthly tests	Theoretical lectures	Orthogonal vectors vector scale – dot – and cross product applications of – vectors – magnetic – flux – Max Weyl scalar product of vectors using .Coordinates	Knowledge	hours ۲	Fourth
,Daily tests monthly tests	Theoretical lectures	– Function Trigonometric functions and trigonometric – relations Logarithmic – function Calculating the DC current value for a	Knowledge	hours ۲	Fifth

		circuit with a radius – of [missing value] Calculating the effective voltage value – Transistor load line			
,Daily tests monthly tests	Theoretical lectures	Exponential – functions Hyperbolic – functions Applications of graphing simultaneous functions for a first- degree electrical – circuit Representation of a filter circuit (coil) (and amplitude) of an exponential function – rate of current	Knowledge	hours ۲	Sixth
,Daily tests monthly tests	Theoretical lectures	Limits – Limits of algebraic and trigonometric – functions Applications of limits	Knowledge	hours ۲	Seventh
,Daily tests monthly tests	Theoretical lectures	– Differentiation – Derivative Derivative of algebraic functions – Chain rule – Construction of the – differential circle Calculating velocity – and acceleration Speed of light	Knowledge	hours ۲	Eighth and ninth

,Daily tests monthly tests	Theoretical lectures	The implicit function, the – standard function the higher-order – derivative represents a physical system in .the implicit function	Knowledge	hours ۲	tenth and eleventh
,Daily tests monthly tests	Theoretical lectures	Derivative of trigonometric – functions Derivative of logarithmic – functions Calculating the maximum value of current in a circuit (inductor) capacitor, and resistor) – Voltage gain	Knowledge	hours ۲	Twelfth and thirteenth
,Daily tests monthly tests	Theoretical lectures	Derivative of an exponential – function Derivative of hyperbolic – functions Calculation of the .time constant		hours ۲	fourteenth
,Daily tests monthly tests	Theoretical lectures	Applications of the - derivative equation of the tangent and normal velocity and - - acceleration calculating the rate of change of voltage and current as a function of time	Knowledge	hours ۲	fifteenth

11- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12- Learning and teaching resources	
Available for free	Required textbooks (curriculum (books, if available
- Fundamentals of Geometric Mathematics - Analytical Geometry and Vectors	Main references (sources)
Vector Analysis book	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

1- Course Name
Mechanical engineering
2- Course code
TIDO101
3- Semester/Year
First / ٢٠٢٥-٢٠٢٦

4- Date the description was prepared
٢٠٢٠/٩/١٥
5- Available forms of attendance
mandatory
6- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
7- Name of the course coordinator
Name: A group of students studying the Mechanical Engineering department :e-mail
8- Course Objectives
Teaching students the principles and fundamentals of mechanical workshops for development His skills in his field of specialization
9- Teaching and learning strategy
1. Educational objectives • Understanding the laws of mechanics through experimentation (force, torque, motion) • Developing measurement skills and using devices • Linking theory with practical application • Enhancing analytical and scientific report writing skills 2. Cooperative learning: a strategy in which students work in small groups in a positive and reciprocal interaction where each individual feels responsible for their own learning and the learning of others in order to achieve common goals. The number of members in a cooperative learning group ranges from two to six students who interact and cooperate to help each other learn through group interaction. This strategy is characterized by several advantages • Increased achievement rates and improved thinking skills among students • Developing positive relationships among them improves students' attitudes towards the learning process and increases students' self-confidence • Developing a spirit of cooperation and teamwork among students 3. Interactive learning: The interactive learning strategy is based on the method of interaction between the student, the

lecturer, and the scientific material. This concept can be applied through several means, including cooperative learning and e-learning

4. Diversifying learning methods

- Open education allows learners to access educational or training websites with materials suitable for the curriculum and choose what to learn whenever they want

10- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
and practical exams	Theoretical lectures And the process	Welding Occupational safety and security ,precautions: welding Gas equipment used, how to install and adjust it, and .other auxiliary equipment Gases used and their specifications, welding wires, their types and sizes , other auxiliary materials , welding equipment , types of flames and the method of igniting and adjusting the .required flame And cleaning the edges of the workpieces to be welded	Knowledge and Application	hours ۲ (practical)	the first

and practical exams	Theoretical lectures And the process	:Practical exercises , Welding opposite surfaces , perpendicular surfaces inclined surfaces , welding Circle, long and cross segment	Knowledge and Application	hours ۲ (practical)	the second
and practical exams	Theoretical lectures And the process	, Welding equipment practical training in arc welding Electric in Welding , of different surfaces equipment Users, electrodes ,and how to install them practical training	Knowledge and Application	hours ۲ (practical)	the third
and practical exams	Theoretical lectures And the process	CO2 gas for cutting processes , equipment used and necessary precautions , , Doing welding exercises not glutes. Using CO2 gas	Knowledge and Application	hours ۲ (practical)	Fourth
and practical exams	Theoretical lectures And the process	Training in electric arc welding operations welding By gas(Tig, Mig).	Knowledge and Application	hours ۲ (practical)	Fifth
and practical exams	Theoretical lectures And the process	Assembly exercises using various different cutting and . welding processes	Knowledge and Application	hours ۲ (practical)	Sixth
and practical exams	Theoretical lectures And the process	Bodywork and blacksmithing bending and cutting equipment , rolling machine , grooving ,machine and hand tools	Knowledge and Application	hours ۲ (practical)	Seventh

		manual billet bending and shaping , grooving Typical, the list and drawing method, simple individual , items Calculating the uniqueness of the cut and missing operators			
and practical exams	Theoretical lectures And the process	exercises : Welding opposite surfaces , perpendicular , surfaces , Inclined surfaces Circular welding , long and cross cuts	Knowledge and Application	hours ۲ (practical)	Eighth and ninth
and practical exams	Theoretical lectures And the process	Cone gaps	Knowledge and Application	hours ۲ (practical)	tenth and eleven
and practical exams	Theoretical lectures And the process	Lathe ,The lathe: its specifications uses, accessories , and installation methods ; lathe operation ; types of lathe .tools and their applications .Including them	Knowledge and Application	hours ۲ (practical)	Twelfth and thirteen
and practical exams	Theoretical lectures And the process	: Turning operations ,Planar turning , Adla center work , graduated exercises Simple, using measuring tools.	Knowledge and Application	hours ۲ (practical)	fourteen
and practical exams	Theoretical lectures And the process	External lathe Different methods with explanations of the laws , summaries in . each way, and exercises	Knowledge and Application	hours ۲ (practical)	fifteenth

11- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12- Learning and teaching resources	
Available for free	Required textbooks (curriculum (books, if available
Workshop Technology Part 1 and Part 2 by W.A. Chapman	Main references (sources)
Engineering Materials Book by Dr. Saleh Amin Karakji	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
DC electrical circuits

٢- Course code
MDDI100
٣- Semester/Year
First / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Riyad Rajab Mahmoud
:Email address riyadhrajabmm@gmail.com
٨- Course Objectives
practically connect electrical circuits in the laboratory Identifying the error
٩- Teaching and learning strategy
1. Educational objectives • Understanding the concepts of current, voltage, and resistance • Applying basic laws • Series and parallel circuit analysis • Solving real-world problems using electrical laws 2. :Knowledge Studying the concepts of electricity, electrical voltage, insulating materials, direct current, and how to connect an electrical circuit 3. Skills • The traditional method of giving a lecture • Using modern technologies in some subjects ,smartboard)SHOW-DATA (and the use of devices , . Modern laboratory 4. Values • The student's ability to scientifically connect electrical circuits in the laboratory • Developing the student's ability to identify errors in electrical circuit connections

5. Calendar

- Short quizzes after each topic
- Practical assignments (solving problems)
- Simple projects such as building, operating, and analyzing complex circuits

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports written , exams and daily exams	Theoretical and practical lectures	system Units Electrical Applications Mathematics- Definition Units Basic For effort and the current Resistance- Components The circle Electrical Law Ohm- Factors Influential on Resistance- Resistance connectors Insulators- effect degree Heat. On Resistance- Degree Heat coefficient Resistance— Examples	Knowledge and Application	hours ٢ (theory) ٢ hours (practical)	the first
,Reports written , exams and daily exams	Theoretical and practical lectures	include Circles Current Continuous: series communication	Knowledge and Application	hours ٢ (theory) ٢	the second

		Resistors Examples- Delivery parallel For resistors Examples- link The star and the delta For ,resistors- collection link Resistors Examples- Conversion between The star and the delta with Examples		hours (practical)	
,Reports written , exams and daily exams	Theoretical and practical lectures	on Connections sequential and parallel and integrated and stardom	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the third
,Reports written , exams and daily exams	Theoretical and practical lectures	laws Kirchhoff- Laws Kirchhoff For the current and effort with Examples	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Fourth
,Reports written , exams and daily exams	Theoretical and practical lectures	law Maxwell with Examples	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Fifth
,Reports written , exams and daily exams	Theoretical and practical lectures	How to Application in stream continuous Thevinin - Definition theory	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Sixth
,Reports written , exams	Theoretical and practical lectures	identification theory Norton- How To Application in	Knowledge and Application	hours ۲ (theory) ۲	Seventh

and daily exams		Current Continuous		hours (practical)	
,Reports written , exams and daily exams	Theoretical and practical lectures	Examples on Theories Thafann Norton	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Eighth
,Reports written , exams and daily exams	Theoretical and practical lectures	identification theory location Dinner- App theory Location in Current Continuous- Examples- Max. theory transfer Energy with Examples	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Ninth
,Reports written , exams and daily exams	Theoretical and practical lectures	quantities Current The hesitant-definition features Current Frequent-Generating RMS Current The hesitant with fee appearance Wave- Factor appearance value Examples	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	tenth
,Reports written , exams and daily exams	Theoretical and practical lectures	Phasor angle vector For quantities Current The hesitant-definition-representation , Hit Subt. AC. Phase-Output on addition vector	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	eleventh

		portion with Examples			
,Reports written , exams and daily exams	Theoretical and practical lectures	Current The hesitant on circuit Induction only Resistance- Circle condenser Just- corner Al- Tur between Effort and the current with Examples	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	twelfth
,Reports written , exams and daily exams	Theoretical and practical lectures	impact stream Current The hesitant on Resistance incitement in series resistance The circle and the condenser in series Resistance incitement and the condenser in Series- Angle Phase- Impedance College with Examples	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	thirteenth
,Reports written , exams and daily exams	Theoretical and practical lectures	impact Current The hesitant on Resistance incitement in resistance The circle parallel and the condenser in Resistance sequential and urging and the condenser in Series- Angle	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	fourteenth

		Phase-Impedance College With examples			
,Reports written , exams and daily exams	Theoretical and practical lectures	Find Resistance College- Current Acceptance Totalj use factor Operation , and effort and angle Al-Tur For objections sequential and parallel with Examples	Knowledge and Application	hours ٢ (theory) ٢ hours (practical)	fifteenth

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
Electric Circuits – by JamesW. Susan Riedel	Main references (sources)
INTRODUCTION TO Electrical and Electronics Circuits	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Principles of Electronics
٢- Course code
MDDI101
٣- Semester/Year
First / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Muhannad Tahseen Hamdi :Email eng.muh@ntu.edu.iq
٨- Course Objectives
Introducing and applying fundamental scientific concepts related to engineering. Electronics and Electrical Engineering
٩- Teaching and learning strategy
1. Educational objectives • Understanding the properties of electronic components • Electronic circuit analysis • Linking signals

• Simple circuit design
2. :Knowledge
• To qualify graduates scientifically in the field of electronics and electricity by introducing fundamental scientific concepts related to engineering and applying them to this field, and to encourage students towards scientific research outside the framework of the .curriculum
3. :Skills
• Project management skills • The ability to solve problems in the workplace and .resolve crises in this field
4. Education using technology
• Using simulation software • Show explanatory educational videos
5. teaching methods
• Smart board • Measuring devices • computer • real electronic components
6. Assessment methods
• Theory tests • practical assessment within the laboratory • Project evaluation • Feedback and Participation

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week

,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	introduction on science Electronics- theory Similar connectors Add- on impurities negative And positive- Currents in Similar connectors	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the first
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	bilateral semi Mosul -PN connector areas Link Bias Imami and bias reverse Greatest- stream In front) of me) IF max (Greatest- an effort Inverse (PIV max -) greatest capacity distracted Resistance- Total The circle.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the second
,Reports , theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Unification The guide alternating Unified- half The wave account Currents- and efforts Continuous and effective and account Frequency.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the third

,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Unification The wave The complete Using- converter fork Middle Unified- Al-Qantari account Values Ongoing- and effective For efforts - Currents Output Frequency	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Fourth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	comparison between Unification half The wave And the wave The complete Examples Athletic.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Fifth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Filters LC and RC filters efforts Al-Kharj Ripple- complications Effort.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Sixth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	pruning Its types : ,negative- ,Positive The compound Obligation- Its types: ,positive ,Negative The compound.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Seventh
,Reports ,theoretical oral, and	,Whiteboard PowerPoint ,slides	bilateral Zener ,Its composition Its symbol	Knowledge and Application	hours ۲ (theory) ۲	Eighth

written exams	practical experiments	Its properties Imamiyyah and the opposite Efforts- Collapse And the fracture reluctance Zener- - Its use in to organize Effort		hours (practical)	
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Types Other For pairs: pair variable Capacity bilateral Instigator For light- bilateral He depends on light Panel- pieces The seven.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Ninth
,Reports , theoreti cal, oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	transistor bilateral Polarity - Its composition Its symbol Its properties Its regions- And its definition relationship between them identification areas The mission on curves Properties	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	tenth
,Reports ,theoretical oral, and	,Whiteboard PowerPoint ,slides	Circles bias transistor Bias	Knowledge and Application	hours ۲ (theory) ۲	eleventh

written exams	practical experiments	The base bias -The motive bias The mosque.		hours (practical)	
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Bias Self bias Divider- Effort bias- Nutrition Background - Examples Sports	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	twelfth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	The circle The reward Continuous For the transistor line Pregnancy- Continuous points and areas the job- Examples.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	thirteenth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Use transistor in Enlarge Signs The small The Circle- The reward alternating earn Current- earn Effort earn The ability.	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	fourteenth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Response Frequency For the transistor- an offer Package My resistance Insert- and exit magnifying glass Types Amplifiers: - amplifier a base Joint amplifier Insulator-	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	fifteenth

		subscriber amplifier mosque subscriber- - comparison Between them.			
--	--	--	--	--	--

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
Electronic devices and circuit theory	Main references (sources)
Available in the institute's library	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Principles of Digital Circuits
٢- Course code
MDDI102
٣- Semester/Year
First / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Ahmed Nadhir Hammadi :Email ahmed.nther@ntu.edu.iq
٨- Course Objectives
1- .Teaching the student the numerical systems of digital circuits 2- .Teaching the student how digital circuits work 3- .Teaching the student arithmetic operations in digital circuits 4- .Teaching the student to decipher and decipher
٩- Teaching and learning strategy
1. Knowledge: Building logic and digital circuits and teaching ; the student the fundamentals of the binary system .designing and analyzing digital circuits 2. Skills • The traditional method of giving a lecture • Using modern technologies in some subjects(Smart BoardSHOW) Data and the use of modern laboratory . equipment 3. Interactive learning • Ask direct questions during the explanation • Solving group problems inside the hall 4. Practical education

- Designing and explaining circuits in the laboratory
 - Actual implementation of the circuits
5. Visual education
- Using circuit diagrams and drawings
 - Clarification of actual tables
6. Calendar
-) Short testsquizzes (
 - Circuit design duties
 - A practical test as a circuit building
 - Simple projects such as designing a security system
7. Developing students' skills
- Encouraging logical and analytical thinking
 - teamwork
 - Using technology in education

١٠ - Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week

,Reports exams and daily updates	Theoretical and practical lectures	General overview of number systems: types and details	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the first
,Reports exams and daily updates	Theoretical and practical lectures	Conversion is not between number systems	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the second
,Reports exams and daily updates	Theoretical and practical lectures	, gates : types operating principle, tables ,The truth is logical symbols	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	the third
,Reports exams and daily updates	Theoretical and practical lectures	How to connect logic gates to form logic circuits	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Fourth
,Reports exams and daily updates	Theoretical and practical lectures	Logical algebra and De Morgan's rule	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Fifth
,Reports exams and daily updates	Theoretical and practical lectures	Simplifying logical equations using Boolean algebra and de . Morgan's laws	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Sixth
,Reports exams and daily updates	Theoretical and practical lectures	Designing logic gates using NAND circuits NOR	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Seventh
,Reports exams and daily updates	Theoretical and practical lectures	Methods for writing the equation from the truth table(SOP , POS)	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Eighth
,Reports exams and daily updates	Theoretical and practical lectures	Karno map for two , variables	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	Ninth

		third ,variables			
,Reports exams and daily updates	Theoretical and practical lectures	Simplifying logical equations using a Karno map	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	tenth
,Reports exams and daily updates	Theoretical and practical lectures	Calculations in the binary system are addition and .subtraction Subtraction using addition does not ...	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	eleventh
,Reports exams and daily updates	Theoretical and practical lectures	half-snake logic , circuits snakes ,Complete parallel circuits	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	twelfth
,Reports exams and daily updates	Theoretical and practical lectures	:Two-way circuit ,half- subtraction ,full subtraction parallel A circuit using a snake circuit in a complementary .way1 second	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	thirteenth
,Reports exams and daily updates	Theoretical and practical lectures	Code decoder circuit, size2 4 , :3 8 and4:10	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	fourteenth
,Reports exams and daily updates	Theoretical and practical lectures	- Capacitor circuit only	Knowledge and Application	hours ۲ (theory) ۲ hours (practical)	fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Digital Fundamentals :Author Thomas Floyd	Main references (sources)
Digital Design :Author M. Morris Mano	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Physiology
٢- Course code
MDDI103
٣- Semester/Year
First / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Marwan Abdul Razzaq Kamel :EmailMarwan.kamil@ntu.edu.iq
٨- Course Objectives
Preparing the student to study and understand medical devices by explaining the physiological changes, especially the electrical ,ones, that occur when measuring the different organs of the body their function, and their relationship to the devices used to measure .and diagnose different phenomena and diseases
٩- Teaching and learning strategy
Knowledge: Theoretical understanding and practical functions of .١ the body, because the subject matter depends on explaining how .the human body works, not just memorizing information Skills .٢ • The traditional method of giving a lecture

Using modern technologies in some topics (Smart Board SHOW) DATA And the use of modern laboratory equipment
3. Teaching objectives - Understanding the functions of body systems - Interpreting the relationship between organs and systems - Developing analytical thinking
4. Interactive learning - Ask questions during the explanation - Group discussions - Give scenarios and ask for their analysis
5. Visual education - Body drawings - Device diagrams - Explanatory videos
6. Calendar - Analytical questions - Short tests - Discussing the solution

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests	Theoretical lectures	- Muscle tissues Types of muscles – Structural) (Cardiac – Visceral	Knowledge and Application	hours ٢	the first
Daily tests	Theoretical lectures	Changes that to speak in muscle during And after Shrinkage Especially Changes Electric – Shrinkage muscular Simple	Knowledge and Application	hours ٢	the second

Daily tests	Theoretical lectures	Pain muscular – Stress muscular	Knowledge and Application	hours ۲	the third
Daily tests	Theoretical lectures	stimulants successive on muscle And it shrinks.	Knowledge and Application	hours ۲	Fourth
Daily tests	Theoretical lectures	The device Nervous The sensory (its parts) – Its functions- areas Functional in brain	Knowledge and Application	hours ۲	Fifth
Daily tests	Theoretical lectures	stimulants – role nerves in transfer Stimuli- Reflections	Knowledge and Application	hours ۲	Sixth
Daily tests	Theoretical lectures	The device Nervous Self	Knowledge and Application	hours ۲	Seventh
Daily tests	Theoretical lectures	The device Nervous The sympathetic nervous system Nervous The parasympathetic nervous system.	Knowledge and Application	hours ۲	Eighth
Daily tests	Theoretical lectures	Circulation (Heart) – Its construction – currency – Its importance pulses (cardiac)	Knowledge and Application	hours ۲	Ninth
Daily tests	Theoretical lectures	vessels Blood- its components – Types – Her work And its importance.	Knowledge and Application	hours ۲	tenth
Daily tests	Theoretical lectures	pressure blood – Its measurement	Knowledge and Application	hours ۲	eleventh
Daily tests	Theoretical lectures	pressure Blood– Its importance- role blood in The body.	Knowledge and Application	hours ۲	twelfth

Daily tests	Theoretical lectures	The device) Respiratory breathing) – Types breathing	Knowledge and Application	hours ۲	thirteenth
Daily tests	Theoretical lectures	blood in device breathing – movements respiratory – pressure cavity	Knowledge and Application	hours ۲	fourteenth
Daily tests	Theoretical lectures	expansion lung – ingredients air Inhalation.	Knowledge and Application	hours ۲	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the institute's library	Required textbooks (curriculum (books, if available
1. Bioelectricity - By: Mary A. Brazier. ۲. Text Book Of Physiology - By: Best and Taylor.	Main references (sources)

3. Physiological Basis of Medical Practice (Ninth Edition)- ۳ By: John R. BG back-S&C. CO. New Delhi.	
Text Book Of Physiology - By: Best and Taylor.	Recommended books and references (scientific journals (...and reports
Department website	Electronic references and websites

۱- Course Name
electrical workshop
۲- Course code
MDDI104
۳- Semester/Year
First / ۲۰۲۰ - ۲۰۲۱
۴- Date the description was prepared
۲۰۲۰/۹/۱۰
۵- Available forms of attendance
mandatory
۶- Number of credit hours (total) / Number of units (total)
(hours ۳۰) hours per week ۲
۷- Name of the course coordinator
Name: Abdullah Salah Latif :e-mail Abdullah.s.lateef@gmail.com
۸- Course Objectives

,To familiarize students with electronic boards, how to handle them and to provide them with experience and proficiency in working with them

9- Teaching and learning strategy

1. Teaching objectives

- To equip students with practical skills in electrical wiring
- Mastering the use of electrical tools
- Understanding the basics of electrical connections
- Reading electrical diagrams
- Implementing circuits securely
- Troubleshooting and repair

2. Practical education

- Conducting experiments within the workshop
- Training students on real connections
- Involving the student directly in the work

3. Cooperative education

- Dividing students into work teams
- ,Distributing tasks within the team (installation, testing (documentation
- Promoting a spirit of cooperation

4. Acquired skills

- Connection and installation skills
- Using measuring tools
- Reading electrical diagrams
- Occupational safety skills
- teamwork
- Analytical thinking for troubleshooting

5. Assessment methods

- Practical assessment: a) Student evaluation within the .workshop; b) Accuracy and safety of connections
- Practical reports: Writing reports on the experiments .conducted

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily reports and exams	Practical lectures	The previous work is repeated by having the student design a more complex circuit.	Knowledge and Application	hours ٢	the first
Daily reports and exams	Practical lectures	Semiconductor - testing faulty and working transistors and diodes For a group of them	Knowledge and Application	hours ٢	the second
Daily reports and exams	Practical lectures	field visit to one of Industrial establishment in the socialist sector	Knowledge and Application	hours ٢	the third
Daily reports and exams	Practical lectures	complex electronic circuits Simple printed circuit boards And learning how to inspect and test	Knowledge and Application	hours ٢	Fourth

		them, such as a .filter circuit			
Daily reports and exams	Practical lectures	wave rectifier circuit on a printed circuit board and learning how to .test it Test it	Knowledge and Application	hours ۲	Fifth
Daily reports and exams	Practical lectures	-Building a full wave circuit on a printed circuit board and learning how to inspect and .test it	Knowledge and Application	hours ۲	Sixth
Daily reports and exams	Practical lectures	wave voltage multiplier circuit on a printed circuit board and learning how to Examine and test it.	Knowledge and Application	hours ۲	Seventh
Daily reports and exams	Practical lectures	) Building a circuit clippers) on the (printed board and learning how Examine and test it .	Knowledge and Application	hours ۲	Eighth
Daily reports and exams	Practical lectures	Using Zener bin(Diode Zener As a voltage regulator circuit on the board The printed material and how to examine and test it.	Knowledge and Application	hours ۲	Ninth
Daily reports and exams	Practical lectures	Building a transistor amplifier circuit on a printed circuit board and learning how to	Knowledge and Application	hours ۲	tenth

		.inspect and test it Building a practical circuit for a large common -emitter Common .Emitter			
Daily reports and exams	Practical lectures	Inspecting semiconductor diodes , transistors ,etc unemployed and The righteous For a group of them	Knowledge and Application	hours ۲	eleventh
Daily reports and exams	Practical lectures	Integrated electronic circuits Circuits Integrated - Identifying the pin numbering for various types of these circuits- How to manufacture these circuits- Components used in manufacturing	Knowledge and Application	hours ۲	twelfth
Daily reports and exams	Practical lectures	two relays on a printed circuit board And to learn how to examine it and Test it	Knowledge and Application	hours ۲	thirteenth
Daily reports and exams	Practical lectures	-Building a push pull amplifier circuit amplifier –Pull Push on the printed circuit board and learn how to .inspect and test it	Knowledge and Application	hours ۲	fourteenth
Daily reports and exams	Practical lectures	Building a capacitive resistor oscillator circuit RC	Knowledge and Application	hours ۲	fifteenth

		on the printed circuit board and learn how to inspect and test it.			
--	--	--	--	--	--

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
Electrical Wiring and maintenance	Main references (sources)
BASIC Electrical ENGINEERING	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
engineering drawing
٢- Course code
MDDI110
٣- Semester/Year
First / ٢٠٢٦ - ٢٠٢٥
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Muhammad Ali Mahmoud :Email mohammed.am@ntu.edu.iq
٨- Course Objectives
Student definition Using the system AutoCAD with applications in its field of specialization
٩- Teaching and learning strategy
- Educational objectives - Mastering the basics of AutoCAD) The ability to draw engineering plans accurately 2D, 3D (- Understanding commands and tools and using them in real-world projects - Developing engineering thinking skills - teaching strategies - A simple explanation of the matter, a direct application .to the program - Example: Explaining the Line command and then drawing geometric shapes using it - Gradual learning - Getting acquainted with the program interface

- Basic commands
 - Advanced Commands
4. Educational resources
- A computer for every student
 - AutoCAD software installed
 - projector (for explaining the steps)
 - educational and explanatory videos
5. Assessment methods
- Observing student performance during work
 - Daily exercise assessment
 - Simple theoretical questions (command functions)
 - End-of-semester project: A complete drawing
 - Practical tests on the program

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week

,Daily ,monthly and practical tests	Practical lectures	The importance of engineering and industrial drawing- drawing tools and their uses- corrective drawing dimensions- drawing dimensions- drawing a data table The drawing- Definitions of the point Line and surface	Knowledge and Application	hours ۲	the first
,Daily ,monthly and practical tests	Practical lectures	Drawing types of lines: , hidden line ,concealed line center line, cutting line, cutting line for small parts , cutting , line for large parts ,cutting level line dimension line, and - extension line drawing the drawing	Knowledge and Application	hours ۲	the second
,Daily ,monthly and practical tests	Practical lectures	Another panel on the lines includes a set of geometric shapes. Simple and contains a set of fonts	Knowledge and Application	hours ۲	the third
,Daily ,monthly and practical tests	Practical lectures	Explanation of electrical and electronic symbols	Knowledge and Application	hours ۲	Fourth

,Daily ,monthly and practical tests	Practical lectures	Drawing a board of electrical and electronic symbols	Knowledge and Application	hours ۲	Fifth
,Daily ,monthly and practical tests	Practical lectures	Writing Latin letters and numbers- a board that includes writing numbers and letters vertically and then diagonally at an angle in sizes of four millimeters Up to ten millimeters	Knowledge and Application	hours ۲	Sixth
,Daily ,monthly and practical tests	Practical lectures	Continuation of the previous painting	Knowledge and Application	hours ۲	Seventh
,Daily ,monthly and practical tests	Practical lectures	How to distribute and install measuring devices(ammeter, voltmeter, wattmeter) and protective devices(Circuit breakers- Fuses- Switches- Circuit breakers- Switches	Knowledge and Application	hours ۲	Eighth
,Daily ,monthly and practical tests	Practical lectures	Geometric :operations include -۱ Dividing a line into equal and unequal ratios Straight line -۲ bisection Erecting a -۳ perpendicular to a	Knowledge and Application	hours ۲	Ninth

		straight line or arc from an inside point to an outside point About him 4 Draw a straight - line parallel to a known straight line at a known distance Bisecting an -^o angle-6 Finding the -¹ center of a given arc or circle 7 A circle - touching the sides of a floating triangle from the inside And outside - one painting			
,Daily ,monthly and practical tests	Practical lectures	Drawing tangents to a circle: Drawing an arc that touches two given circles internally. Outside- Draw a straight line touching two known circles from the outside- Draw an arc for half A known diameter touches a known straight line and a known circle.	Knowledge and Application	hours ۲	tenth
,Daily ,monthly and practical tests	Practical lectures	Draw a regular polygon given the side length using the general	Knowledge and Application	hours ۲	eleventh

		method; draw a regular pentagon given the diameter of the circle; draw a regular hexagon Given the diameter of the circle- draw a perspective drawing of the circle at a 30° angle			
,Daily ,monthly and practical tests	Practical lectures	Electrical installations- drawing a special diagram for electrical installations For a room with an attached storage room	Knowledge and Application	hours ۲	twelfth
,Daily ,monthly and practical tests	Practical lectures	Drawing a diagram of the complete connections of the fluorescent tube	Knowledge and Application	hours ۲	thirteenth
,Daily ,monthly and practical tests	Practical lectures	Drawing an electronic circuit board containing a set of circuits Electronic	Knowledge and Application	hours ۲	fourteenth
,Daily ,monthly and practical tests	Practical lectures	Draw the simple three-dimensional shape at a 30-degree angle and an angle	Knowledge and Application	hours ۲	fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
AutoCAD 2024 and AutoCAD Lt 2024 Essentials	Main references (sources)
Introduction to AutoCAD 2024	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Democracy and rights man
٢- Course code
NTU 100
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Rabah Muhammad Farih
:e-mail rabahfrayyih@gmail.com
٨- Course Objectives

1 The student learns about the principles and values of human rights and their definition. It involves raising generations to respect and adhere to it.

To learn about public freedoms and the nature of these - ٢ freedoms in its details and the relationship between it and democracy

٩- Teaching and learning strategy

1. Knowledge

- Instilling the principles of human rights in students in a way that achieves a correct understanding of these rights based on concepts

,Islamic law compared to international conventions

- Spreading a culture of human rights in society

2. Skills

- .He is familiar with human rights and democratic systems
- Identifying civil society organizations

3. Values

- Improving their discussion skills
- Encouraging freedom of expression within the hall .while respecting the laws

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Oral exams short , tests, in-room discussion	Theoretical lectures And the offer on Smart screens	concept rights man	Knowledge	hours ٢	the first

Oral exams short , tests, in-room discussion	Theoretical lectures And the offer on Smart screens	Objectives and characteristics rights man	Knowledge	hours ۲	the second
Oral exams short , tests, in-room discussion	Theoretical lectures And the offer on Smart screens	rights man in Civilizations Old	Knowledge	hours ۲	the third
Oral exams short , tests, in-room discussion	Theoretical lectures And the offer on Smart screens	Confession International rights man	Knowledge	hours ۲	Fourth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on smart screens	Organizations International not Government	Knowledge	hours ۲	Fifth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	rights man in Constitutions Iraqi	Knowledge	hours ۲	Sixth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	rights man in Iraq After2003	Knowledge	hours ۲	Seventh
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	concept Democracy	Knowledge	hours ۲	Eighth
Oral exams short , tests, in-	Theoretical lectures – and	Shapes or photo Democracy	Knowledge	hours ۲	Ninth

room discussion	presentations on screens				
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	Features order Democratic and its components	Knowledge	hours ۲	tenth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	Advantages of democracy	ID	hours ۲	eleventh
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	the components Home For democracy	Knowledge	hours ۲	twelfth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	Constitution and democracy	Knowledge	hours ۲	thirteenth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	The concept of elections	Knowledge	hours ۲	fourteenth
Oral exams short , tests, in-room discussion	Theoretical lectures – and presentations on screens	relationship between Democracy and rights man	Knowledge	hours ۲	fifteenth

Student reports and activities, oral and written theoretical and practical exams
--

١٢- Learning and teaching resources	
Human rights and democracy	Required textbooks (curriculum (books, if available
Human rights and democracy	Main references (sources)
Available in the institute's library	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
the language Arabic
٢- Course code
NTU 103
٣- Semester/Year
First / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared

٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٢٠) hours per week ٢
٧- Name of the course coordinator
Name: Muhammad Abdul Qadir Hamad :Email address Mohamed.qader77@gmail.com
٨- Course Objectives
administrative and accounting correspondence and developing their skills in this field
٩- Teaching and learning strategy
1. Knowledge • Teaching students how to preserve standard Arabic and .avoid colloquial language • Developing the skill of accurate reading and comprehension • Mastering and applying grammatical rules • Developing speaking and listening skills • Enhancing literary taste 2. skill • Teaching the student to write without spelling errors by .mastering the rules of the Arabic language • In-depth analysis of literary and linguistic texts • Interpreting explicit and implicit meanings • Employing grammatical and rhetorical rules in analysis 3. Calendar • Participating in discussions within the lecture •) Short testsquizzes (• Homework

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week

,Written oral, and written exams	Theoretical – lectures and presentations on screens	introduction on Mistakes Linguistic	Knowledge	hours ٢	the first
,Written oral, and written exams	Theoretical – lectures and presentations on screens	rules writing A The extended and the cabin	Knowledge	hours ٢	the second
,Written oral, and written exams	Theoretical – lectures and presentations on screens	The letter Ḍād ذ And the letter	Knowledge	hours ٢	the third
,Written oral, and written exams	Theoretical – lectures and presentations on screens	writing Hamza	Knowledge	hours ٢	Fourth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Signs Numbering	Knowledge	hours ٢	Fifth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	the name And the verb and separation between them	Knowledge	hours ٢	Sixth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Objects	Knowledge	hours ٢	Seventh
,Written oral, and written exams	Theoretical – lectures and	number	Knowledge	hours ٢	Eighth

	presentations on screens				
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Applications Mistakes Linguistic The rumor	Knowledge	hours ٢	Ninth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Nun And tanween	Knowledge	hours ٢	tenth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Aspects Formal For the speech Administrator	Knowledge	hours ٢	eleventh
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Meanings letters The tractor	Knowledge	hours ٢	twelfth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	Letters solar and the moon	Knowledge	hours ٢	thirteenth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	T tied And the long one	Knowledge	hours ٢	fourteenth
,Written oral, and written exams	Theoretical – lectures and presentations on screens	T Open	Knowledge	hours ٢	fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
https://archive.org/details/a2148n?utm_source=chatgpt.com	Required textbooks curriculum books, if) (available
https://www.noor-book.com/en/ebook-Grammar-of-the-Arabic-Language-%D8%A7%D9%84%D9%86%D8%AD%D9%88--pdf?utm_source=chatgpt.com	Main references (sources)
https://foulabook.com/ar/book/%D9%85%D8%B1%D8%AC%D8%B9-%D8%A7%D9%84%D8%B7%D9%84%D8%A7%D8%A8-%D9%81%D9%8A-%D9%82%D9%88%D8%A7%D8%B9%D8%AF-%D8%A7%D9%84%D9%86%D8%AD%D9%88-pdf?utm_source=chatgpt.com www.sciencedirect.com	Recommended books and references scientific journals and) (...reports
Official website of the department	Electronic references and websites

١- Course Name
Sports
٢- Course code
NTU104
٣- Semester/Year
Second / ٢٠٢٥-٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Basem Hamad Hassan :Name
: Email address basem.hamad2a@st.tu.edu.iq
٨- Course Objectives
The student should be able to identify the most important types of ?sports. What are the rules and skills specific to some sports
٩- Teaching and learning strategy
1. Teaching objectives • Developing physical fitness and general health • Developing motor and athletic skills • Promoting a spirit of cooperation and teamwork • Developing discipline and self-confidence among students • Spreading sports culture and healthy behavior 2. Learning by doing: This relies on the direct, practical .application of athletic skills within the field or sports hall

3. Cooperative learning: Dividing students into teams or groups to carry out exercises and sports activities collectively
4. Presentation and explanation method: The teacher presents mathematical skills both theoretically and practically
5. Educational resources
 - Balls and sports equipment
 - Sports halls and stadiums
 - Educational videos
 - whiteboard and projector
6. Knowledge
 - Understanding the most important sports legislation and laws, and how to manage sports tournaments and competitions
 - Understanding the kinetic mechanisms of the human body and the common injuries that occur in the human body
7. Skills
 - Understanding the kinetic mechanisms of the human body and the common injuries that occur in the human body
8. Values
 - Performing his duties at the workplace with professional motivations.
 - Improving his physical fitness and increasing his ability to withstand the demands of muscular and motor work
9. Assessment methods
 - Assessment of practical performance in athletic skills
 - Fitness tests
 - Attendance and active participation
 - Theoretical tests related to mathematical laws and health
 - Evaluating teamwork and discipline

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Theoretical and practical exams	Lectures - Theory Process	Introduction to sports	Knowledge and Application	hours ٢	the first
Theoretical and practical exams	Lectures - Theory Process	Human body movement – the mechanism of movement in the human body	Knowledge and Application	hours ٢	the second
Theoretical and practical exams	Lectures - Theory Process	– Injuries Common Sports Injuries	Knowledge and Application	hours ٢	the third
Theoretical and practical exams	Lectures - Theory Process	– Basketball Definition and – Types of Skills Basic Skills of – Basketball International Rules of Basketball	Knowledge and Application	hours ٢	Fourth
Theoretical and practical exams	Lectures - Theory Process	International Law of Tennis – Basic Skills of the Game	Knowledge and Application	hours ٢	Fifth and sixth

Theoretical and practical exams	Lectures - Theory Process	Volleyball and swimming Basic skills for – volleyball Swimming and its types	Knowledge and Application	hours ۲	Seventh and eighth
Theoretical and practical exams	Lectures - Theory Process	– Tennis Handball: Basic – Tennis Skills Basic Handball Skills	Knowledge and Application	hours ۲	The ninth and tenth
Theoretical and practical exams	Lectures - Theory Process	International Handball Rules	Knowledge and Application	hours ۲	eleventh
Theoretical and practical exams	Lectures - Theory Process	Track and field games	Knowledge and Application	hours ۲	twelfth
Theoretical and practical exams	Lectures - Theory Process	Football – Basic Football Skills	Knowledge and Application	hours ۲	thirteenth
Theoretical and practical exams	Lectures - Theory Process	Competitions and – contests Competition – management Sports – competitions Sports laws and regulations	Knowledge and Application	hours ۲	Fourteenth and fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
• The Science of Sports Training • Physiology of Physical and Sports Exercise	Main references (sources)
• Fundamentals of Sports Training Science • Principles of Physical Education	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Differential and Integral Calculus
٢- Course code
TIDO102
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory

٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Muhammad Ali Mahmoud :Email mohammed.am@ntu.edu.iq
٨- Course Objectives
Teaching students to use mathematics in scientific subjects and .developing their skills In his field of expertise
٩- Teaching and learning strategy
1. Educational objectives • Understanding the concept of end and continuity • ,Mastering derivation and its applications (velocity (slope • Understanding integration and its applications (area (and volume • Linking differential and integral calculus as a single system 2. Knowledge Introducing the student to the use of mathematics in other scientific subjects and increasing their ability to think logically when Solving exercises, as well as increasing his ability to develop and how to link data with his knowledge to obtain a .solution to the problem 3. Skills • The traditional method of giving a lecture •) Using modern technologies in some subjects smartboard- SHOW DATA 4. Assessment methods • Weekly assignments •) Short testsquizzes (

Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Course – Introduction Learning – Objectives Course Content	Knowledge and Application	hours ۲	the first
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Applications of differential – calculus – subheadings maximum and – minimum values ,distance, velocity – and acceleration physics – applications engineering applications	Knowledge and Application	hours ۲	the second
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Applications of - differentiation Graphing - functions Graphing trigonometric functions - Inverse functions	Knowledge and Application	hours ۲	the third
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Applications of – differentiation Exponential – functions Logarithmic – functions – Maximum limits – Minimum limits – Inflection points Alignments	Knowledge and Application	hours ۲	Fourth

Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Integration – Laws and its relation to – differentiation – Definite integral Indefinite integral Applications of – integration	Knowledge and Application	hours ۲	Fifth and sixth
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Integration – Area – under a curve Area between two – curves Approximate area Volumes of – revolution, with attention to .drawing	Knowledge and Application	hours ۲	The seventh and eighth
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	– Integration Finding the arc – length of a curve Various applications	Knowledge and Application	hours ۲	The ninth and tenth
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	– Integration General methods – of integration Substitution method – Partition method – Method of using fractions Method of using – exponential fractions	Knowledge and Application	hours ۲	,Eleventh ,twelfth and thirteenth
Daily ,quizzes weekly assignments	Theoretical explanation of smart screens	Differential calculus – Solving differential equations	Knowledge and Application	hours ۲	Fourteenth fifteenth ,

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available for free	Required textbooks (curriculum (books, if available
- Fundamentals of Geometric Mathematics - Analytical Geometry and Vectors - Calculus - Thomas Calculus	Main references (sources)
Vector Analysis book	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
electrical drawing
٢- Course code
MDDI105
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Muhammad Atta Allah Dawood
:e-mail

Λ- Course Objectives

This course introduces students to the process of electrical drawing using AutoCAD ,and how to utilize other applications in this field .including drawing electrical diagrams

᠑- Teaching and learning strategy

1. Educational objectives

- Understanding and reading standard electrical symbols
- The ability to draw electrical diagrams accurately
- Linking drawing to practical application
-) Proficiency in using drawing software such as AutoCAD (

2. Application-based learning

- Explaining a symbol or circle with a direct application using a diagram

3. Educational resources

- Computer + drawing software
- Smart screen projector
- Real training plans

4. Assessment methods

- Monitoring the student's drawing during the lecture
- Draw a circle during the lecture time
- Reading and analyzing the electrical diagram
- Theoretical tests on basic symbols and concepts

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Explanation of adding dimensions to the drawing geometrically fee A painting that includes two perspectives with all dimensions in a geometric way	Knowledge and Application	hours ٢	the first
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Drawing complex perspective drawings that include cylindrical shapes or cavities- Drawing a drawing that includes two perspectives with dimensions written on it In an engineering way	Knowledge and Application	hours ٢	the second
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Continuation of the previous topic with a drawing of a painting	Knowledge and Application	hours ٢	the third

Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Drawing a circuit board for an electronic circuit containing Gates.	Knowledge and Application	hours ۲	Fourth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Drawing a circuit board for an electronic device containing integrated circuits	Knowledge and Application	hours ۲	Fifth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Drawing a circuit board for an electronic device containing gates and integrated .circuits	Knowledge and Application	hours ۲	Sixth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Applications of drawing projections from different perspectives	Knowledge and Application	hours ۲	Seventh
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Perspective drawing from the third projection	Knowledge and Application	hours ۲	Eighth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Cutting in objects, cutting lines(marking), definition of parts(Focus on the cutting angle)	Knowledge and Application	hours ۲	Ninth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Drawing a diagram for controlling the -speed of a three .phase motor	Knowledge and Application	hours ۲	tenth

Daily tests And solve the exercises	Theoretical ,lectures practical lectures	How to read a diagram or a set of diagrams for electrical circuits.	Knowledge and Application	hours ٢	eleventh
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Electrical drawing applications on the electronic computer .	Knowledge and Application	hours ٢	twelfth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	CAD. Auto system usage	Knowledge and Application	hours ٢	thirteenth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	ORCAD. Using the system	Knowledge and Application	hours ٢	fourteenth
Daily tests And solve the exercises	Theoretical ,lectures practical lectures	Conducting end-of- semester exams	Knowledge and Application	hours ٢	fifteenth

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the institute's library	Required textbooks (curriculum books, if available)
https://www.youtube.com/@FreeCADTips https://www.academia.edu/3796715/AutoCAD for Mechanical Engineers AutoCAD book	Main references (sources)
https://learn.autodesk.com/ https://www.linkedin.com/learning/autocad-2024-essential-training https://learnmechanical.com/autocad-exercises-pdf /	Recommended books and references (scientific journals (...and reports
Department website	Electronic references and websites

١- Course Name
Electronic workshop
٢- Course code
MDDI106
٣- Semester/Year
Second ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory

٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Muhammad Fadil Abbas :Email addressmhfd19984@gmail.com
٨- Course Objectives
To familiarize students with electronic boards, how to handle them and to provide them with experience and proficiency in working with them
٩- Teaching and learning strategy
- Educational objectives - Identifying electronic components (resistors, capacitors (diodes, transistors - Mastering the use of measuring instruments such as the multimeter - Implementation and assembly of electronic circuits - Detecting and repairing minor faults - Application-based learning - Component explanation: practical experiment - Example: Measuring resistance using a multimeter and then applying it practically - Conducting the experiment in front of the students - Educational resources - Workshop tools (screwdrivers, soldering iron, wires)) Measuring devicesMultimeter (- Experimental boards - Various electronic components - Assessment methods - Practical assessment: a. Evaluating student performance during the experiment; b. Accuracy in .measurement and assembly - Evaluating participation within the workshop - Monitoring compliance and safety - Writing reports for each experience

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests Exercises and reporting	Practical lectures	How to use different measuring devices in the workshop such as(Afumi Ter , Maj Haz Al-Qudra	Knowledge and Application	hours ٢	the first
Daily tests Exercises and reporting	Practical lectures	How to use the kao yat- Types of soldering irons used in the - workshopTraining on soldering irons.	Knowledge and Application	hours ٢	the second

Daily tests Exercises and reporting	Practical lectures	How to use a soldering iron– The number of welding removal tools such as Soldering pipette (sucker solder) Wire solder remover older Training on some electronic components and their placement on the printed ;circuit board soldering tools used in soldering complete electronic circuits. The correct interpretation of the IC dream How to remove solder from circuit board terminals Electronic and its removal from the circuit.	Knowledge and Application	hours ۲	the third
Daily tests Exercises and reporting	Practical lectures	Different types of resistors are classified according to the material they are made of and the power rating they can handle. How to read resistor	Knowledge and Application	hours ۲	Fifth

		values using different methods – Variable resistors and summary (NTC , PTC , VDR And how to examine it.			
Daily tests Exercises and reporting	Practical lectures	Creating a circuit to connect resistors in series Constructing a circuit to connect resistors in ;parallel Constructing a circuit to connect . resistors in series Parallelism within the circle	Knowledge and Application	hours ۲	Sixth
Daily tests Exercises and reporting	Practical lectures	Different types of capacitors , in terms of the type of insulation used between their plates and the voltage they can withstand– reading capacitor values By the roads – Different types How to test capacitors and methods of replacing them– Creating circuits to connect capacitors ,in series , parallel	Knowledge and Application	hours ۲	Seventh

		and mixed . connections circuit board with inspection.			
Daily tests Exercises and reporting	Practical lectures	The different types of keys used In electronic devices and methods of testing them– the current they can withstand Every key– Use each Type. Types of fuses used . In electronic circuits– types and diameters of wires used In smelters The current it can withstand Each type– How to repair fuses	Knowledge and Application	hours ۲	Eighth
Daily tests Exercises and reporting	Practical lectures	electrical loads- Types- Methods of testing them- Determining the type of load - Self- - loading The difference between self - loading and normal loads	Knowledge and Application	hours ۲	Ninth
Daily tests Exercises and reporting	Practical lectures	Semiconductor ,testing , (Diode ,transistor... (.etc unemployed and The correct one For a group of them	Knowledge and Application	hours ۲	tenth
Daily tests	Practical lectures	Integrated electronic circuits Integrated -	Knowledge and Application	hours ۲	eleventh

Exercises and reporting		Identifying the pin numbering for several types of these circuits- How to make these circuits— components involved in manufacturing			
Daily tests Exercises and reporting	Practical lectures	A scientific film was shown about how electronic components are .manufactured ,Resistors ,Capacitors .Transistors , etc	Knowledge and Application	hours ۲	twelfth
Daily tests Exercises and reporting	Practical lectures	How to read maps Electronic The circuits are tracked to determine the location The malfunction and its causes	Knowledge and Application	hours ۲	thirteenth
Daily tests Exercises and reporting	Practical lectures	The student learned how to design electronic circuits on a breadboard and mount electronic components on it— how to install these . components On the board - a simple circle	Knowledge and Application	hours ۲	fourteenth
Daily tests Exercises and reporting	Practical lectures		Knowledge and Application	hours ۲	fifteenth

--	--	--	--	--	--

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
• Basic Electricity	Main references (sources)
• Electricity wiring industrial	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Circles Current electrician Alternating
٢- Course code
MDDI107

٣- Semester/Year
Second ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Riyadh Rajab Muhammad
:Email address rabahfrayyih@gmail.com
٨- Course Objectives
capacity student on link Circles Electric scientific A in The laboratory and the challenge of D The mistake in link Circles Electrical.
٩- Teaching and learning strategy

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Monthly and daily reports and tests	Theoretical and practical lectures	Circles Resonance sequential Parallel- Calculation Effort and the current and resistance and angle Al-Tur	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first

		and hesitation when Resonance with Examples			
Monthly and daily reports and tests	Theoretical and practical lectures	Applications theories Tiffinn Norton And dinner with Examples	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	the second
Monthly and daily reports and tests	Theoretical and practical lectures	account Energy in circuit Current The hesitant only circle Induction only circle capacitor Circuit - , Resistance Induction and the condenser in series and power parallel active and interactive	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	the third
Monthly and daily reports and tests	Theoretical and practical lectures	fee triangle Power- Correctionof power-apparent factor Energy	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourth
Monthly and daily reports and tests	Theoretical and practical lectures	transfer Energy in circle Current The hesitant one- with Examples	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
Monthly and daily reports and tests	Theoretical and practical lectures	Nodal number analysis Networks Using analysis equations node	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
Monthly and daily	Theoretical and	Odel examples on analysis	Knowledge and Application	hours ۲ (theory)	Seventh

reports and tests	practical lectures	Networks Using analysis		hours ۲ (practical)	
Monthly and daily reports and tests	Theoretical and practical lectures	Circles Current The hesitant Third Phase- Generation single Al-Tur and 2 phases And third stages For the line energy Delta connected By phase- examples For energy College	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
Monthly and daily reports and tests	Theoretical and practical lectures	Examples on Circles Current Alternating trilogy Al-Tur with unions Delta Star	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
Monthly and daily reports and tests	Theoretical and practical lectures	Ways measurement ability For loads trilogy Phase- Watt Two meters Watt– three watts	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
Monthly and daily reports and tests	Theoretical and practical lectures	RL-RC- - DC transient - states fleeting in Circles RLC Transit	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh
Monthly and daily reports and tests	Theoretical and practical lectures	Currents Current Alternating Transient currents RL-RC- RLC sinusoidal The passerby in Circles	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth

Monthly and daily reports and tests	Theoretical and practical lectures	Induction Self For the file-equation Induction Self-induction: mutual between two from Laws Progressive Contact series-delivery series Inverse-	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
Monthly and daily reports and tests	Theoretical and practical lectures	Transformers- Structure-Diagram- Properties- Operations And their relationships- types Examples of it	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
Monthly and daily reports and tests	Theoretical and practical lectures	curves Current in circle Induction-Drawing present and account shipment Fixed , For the time discharge Capacitors- Effect The constant For time- examples	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department library	Required textbooks (curriculum books, if available)
Electric Circuits – by JamesW. Susan Riedel	Main references (sources)
INTRODUCTION TO Electrical and Electronics Circuits	Recommended books and references (scientific journals (...and reports
Official website of the department	Electronic references and websites

١- Course Name
Electronics
٢- Course code
MDDI108
٣- Semester/Year
Second /٢٠٢٥-٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator

Name: Muhannad Tahseen Hamdi

:e-mail eng.muh@ntu.edu.iq

Λ- Course Objectives

Introducing the basic scientific concepts related to the field of electronics and electricity And harnessing it in this field

᠑- Teaching and learning strategy

1. Teaching objectives

- Understanding the operating principles of different electronic components
- Distinguishing between types of transistors and their characteristics
- Practical application of electronic circuits in the laboratory
- Developing skills in analysis, measurement, and fault detection
- Linking the theoretical aspect to industrial and practical applications

2. Interactive lecture strategy: The goal of the interactive lecture is to increase students' focus, develop their thinking and analytical skills, and link theory with practical application

3. Educational resources

- Smart board and progressive displays
- Electronic measuring devices
- Images and circuit diagrams

4. Assessment methods

- Short theory tests
- Laboratory reports
- Practical performance evaluation
- Applied projects

١٠ - Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	transistor As a key Regions- the job Satisfaction And the pieces- Bias.	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	transistor in to organize Effort-organizer Succession organizer Parallel- - Equipment ability Continuous In the form transistor As a key.	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	transistor impact Field- Its composition identification an effort distress comparison Between-JFET and	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third

		BJT			
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	– Using FET in Enlarge Signs The small Types- The other FET has its own properties– comparison Between them.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Unifiers Silicon The control (with current) thyristor Composition And the types Properties– – Comparison Sparkling and Extinguishing	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Circles Applied control angle Al-Tur By thyrostat- Use thyristor in I was scared Lighting.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	oscillators principle the job- - Types comparison Between them.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	oscillator Displacement Al-Tur- Oscillators: Colpitts Hartley-	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth

		Dogs... .etc Examples Sports			
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Vibrators principle the job- Types comparison between them	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	oscillators Monotheism Stability- Binary Stability not- Stable.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Circles Integrated Its advantages- And its disadvantages comparison Among them And between- the components The separate one – an idea about its manufacturing	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	amplifier Operations code 741 – Parties Delivery Its uses.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Applications amplifier Operations: Enlargement The signal The small Collection- Signs Presentation Signs– Examples.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth

,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Applications amplifier Operations: Preferred comparative Complete template	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
,Reports theoretical and practical tests	Theoretical explanation and solving exercises	Action points- The point of inactivity- Practical examples	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Electronic devices and circuit theory :AuthorRobert Boylestad	Main references (sources)
1. Electronics basics 2. Analog and digital electronics 3. Microelectronic	Recommended books and references (scientific journals and (...reports

4. Electronic principles	
Official website of the department	Electronic references and websites

١- Course Name
Digital circuits
٢- Course code
MDDI109
٣- Semester/Year
Second ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
Hour (٦٠ hours) per week ٤
٧- Name of the course coordinator
Name: Ahmed Nadhir Hammadi :e-mail ahmed.nther@ntu.edu.iq
٨- Course Objectives
Building logic and digital circuits and teaching the student the basics of the binary system

٩- Teaching and learning strategy

1. Course objectives
 - Understanding the fundamentals of digital systems
 - Understanding logic gates and how they work
 - Analysis and design of digital circuits
 - Developing logical thinking and problem-solving skills
 - Practical application of circuits in the laboratory
2. The mechanism for explaining the interactive lecture
 - Concepts explained with diagrams
 - Asking direct questions during the lecture
 - Solve logical problems with the students
 - Involving students in simplifying circuits
3. Practical education
 - Implementing logic gates
 - Building digital circuits
 - Checking the outputs using measuring devices
4. Educational resources
 - Smart board and demonstrations
 - Training boards
 - Digital measuring devices
 - Fact tables and logical diagrams
5. Evaluation methods
 - Short tests
 - Circuit analysis duties
 - Laboratory reports
 - Practical performance evaluation

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Theoretical and practical lectures	Theoretical and practical lectures	Encryption circuit size: 4 2 and 8 3 and 10 4	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Theoretical and practical lectures	Theoretical and practical lectures	Flip: An introduction to logic circuits, a general idea of (SR). type flop flip ,Flop	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
Theoretical and practical lectures	Theoretical and practical lectures	flop Slave Master and JK face type with a slap	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third
Theoretical and practical lectures	Theoretical and practical lectures	Flip-flops and T-flips D-	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Fourth
Theoretical and practical lectures	Theoretical and practical lectures	Records , record design, data entry, and record output	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Fifth
Theoretical and practical lectures	Theoretical and practical lectures	,Record the shift shift left, shift right	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Sixth

Theoretical and practical lectures	Theoretical and practical lectures	asynchronous counter	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
Theoretical and practical lectures	Theoretical and practical lectures	Synchronous counter- cycle counter	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
Theoretical and practical lectures	Theoretical and practical lectures	Multiplexer and its applications	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
Theoretical and practical lectures	Theoretical and practical lectures	Code Converter- Code Converter App	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
Theoretical and practical lectures	Theoretical and practical lectures	Programmable Logic Classification: ;Array Concepts Programmable Logic(PLA) Concepts; Programmable Array(PAL)	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh
Theoretical and practical lectures	Theoretical and practical lectures	Buffers , non- , inverting buffers ,inverting buffers three- state buffers , transfer gates	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth
Theoretical and practical lectures	Theoretical and practical lectures	Introduction to sequential logic latches and flip-flops, latch operating ,characteristics flip-flop characteristics ,	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth

		and flip-flop applications.			
Theoretical and practical lectures	Theoretical and practical lectures	Status chart and status table	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth fifteenth

۱۱- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Digital Fundamentals :Author Thomas Floyd	Main references (sources)
Digital Design :Author M. Morris Mano	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

۱- Course Name
English Language ۲
۲- Course code
NTU200
۳- Semester/Year
Second ۲۰۲۰ - ۲۰۲۱
۴- Date the description was prepared
۲۰۲۰/۹/۱۰
۵- Available forms of attendance
mandatory
۶- Number of credit hours (total) / Number of units (total)

(hours ٢٠) hours per week ٢
٧- Name of the course coordinator
Name: Ghufraan Luay Naji :Emailghofraanluay95@gmail.com
٨- Course Objectives
Teaching the student how to use English grammar rules in conversation
٩- Teaching and learning strategy
1. Course objectives • Developing reading and writing skills • Increase in vocabulary and grammar • Improving pronunciation and communication in English • Developing comprehension, analysis, and translation skills • Boosting confidence in using language in life and study 2. teaching strategy • Interactive lecture explaining question words and tenses • Learning through conversation among students to get to know each other and ask questions • Learning by doing through forming sentences and questions 3. Activities • Short dialogues between students • Question-forming exercises • Applying tenses in meaningful sentences 4. Calendar • Oral questions • Short tests • Student participation inside the hall 5. Educational resources • Whiteboard and presentations • Audio clips and videos • Dialogue and conversation activities • Language learning applications

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests	Theoretical lectures	Course ,Introduction Learning ,Objectives - Course Content Unit One: Getting to Know Your Tenses, Questions, Question Words	Knowledge	٢ hour (theoretical)	the first
Daily tests	Theoretical lectures	Unit two: the way we live Present tenses Present simple Present continuous Have /have got	Knowledge	٢ hour (theoretical)	the second
Daily tests	Theoretical lectures	Unit three: it all went wrong Past tenses Past simple Past continuous	Knowledge	٢ hour (theoretical)	the third
Daily tests	Theoretical lectures	Unit four: let's go shopping Quantity Much and many Some and any Something, anyone, nobody,	Knowledge	٢ hour (theoretical)	The fourth

		everywhere A few, a little, a lot of Articles			
Daily tests	Theoretical lectures	Unit five, What do you want to do Past tenses Verb patterns\ Future intentions Going to and will	Knowledge	۲ hour (theoretical)	Fifth
Daily tests	Theoretical lectures	Unit six: tell me! What's it like? What's it like? Comparative and superlative adjectives	Knowledge	۲ hour (theoretical)	Sixth
Daily tests	Theoretical lectures	Unit seven :fame Present Perfect and For and since Tense revision	Knowledge	۲ hour (theoretical)	Seventh
Daily tests	Theoretical lectures	Unit eight: does and doesn't Have(got) to Should	Knowledge	۲ hour (theoretical)	Eighth
Daily tests	Theoretical lectures	Unit nine: going Places Time and conditional clauses what if ?	Knowledge	۲ hour (theoretical)	Ninth
Daily tests	Theoretical lectures	Unit ten: scared to death Verbs Patterns infinitives What, etc.+ infinitive Something, etc.+ infinitive	Knowledge	۲ hour (theoretical)	tenth
Daily tests	Theoretical lectures	Unit eleven: Things that changed the world's negatives	Knowledge	۲ hour (theoretical)	eleventh

Daily tests	Theoretical lectures	Unit twelve: dreams and reality Second conditional might	Knowledge	۲ hour (theoretical)	twelfth
Daily tests	Theoretical lectures	Unit thirteen: earning a living Present Perfect continuous Present Perfect simple versus continuous	Knowledge	۲ hour (theoretical)	thirteenth
Daily tests	Theoretical lectures	Unit fourteen: family ties Present perfect and past perfect and clarification Reported statements informant letter	Knowledge	۲ hour (theoretical)	fourteenth
Daily tests	Theoretical lectures	Unit fifteen: Health and fitness Revision	Knowledge	۲ hour (theoretical)	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

-New Headway Plus / Beginner / John and Liz Soars / Oxford University Press / 2014	Required textbooks (curriculum (books, if available
Available in Free Section and library Institute	Main references (sources)

-New Headway Plus / Beginner / John and Liz Soars / Oxford University Press / 2014	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
computer
٢- Course code
NTU201
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Nada Mohsen Ali :e-mail nida.ali@ntu.edu.iq
٨- Course Objectives
The student should be familiar with different computer applications and be able to distinguish between the types of software that can be dealt with ,and be familiar with artificial intelligence, its prospects for dealing with it .and how to benefit from it in all areas of life
٩- Teaching and learning strategy
1. Course objectives

- Understanding the concept of artificial intelligence and its applications
 - Understanding artificial intelligence techniques and methods
 - Developing digital thinking and analysis skills
 - Linking artificial intelligence to different areas of life
 - Raising awareness of the challenges and ethics associated with artificial intelligence
2. Interactive lecture
 - Basic computer concepts
 - Software and operating systems
 - Networks and artificial intelligence
 - Programming basics
 3. The implementation mechanism of the interactive lecture
 - Explaining the material using demonstrations
 - Engaging students in questions and discussions
 - Present practical examples during the lecture
 4. Practical education
 - Computer software application
 - Writing programming code
 - Training on the use of different applications
 5. Educational resources
 - Computers and display devices
 - Computer labs
 - Internet and educational platforms
 - presentations
 - Educational programs and applications
 6. Assessment methods
 - Theoretical and practical tests
 - Performance evaluation within the laboratory
 - Duties and Projects

Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Practical and daily exams	Theoretical and practical lectures	Introduction to Artificial Intelligence	Knowledge and Application	hours ۲	the first
Practical and daily exams	Theoretical and practical lectures	Artificial intelligence techniques and methods	Knowledge and Application	hours ۲	the second
Practical and daily exams	Theoretical and practical lectures	Challenges and ethical considerations in artificial intelligence	Knowledge and Application	hours ۲	Third and fourth
Practical and daily exams	Theoretical and practical lectures	Artificial intelligence in smartphones and virtual assistants - such as Siri	Knowledge and Application	hours ۲	The fifth
Practical and daily exams	Theoretical and practical lectures	Artificial intelligence applications in ,education, health ,finance transportation, and marketing	Knowledge and Application	hours ۲	The sixth
Practical and daily exams	Theoretical and practical lectures	The impact of artificial intelligence on society	Knowledge and Application	hours ۲	Seventh
Practical and daily exams	Theoretical and practical lectures	Artificial intelligence and international relations	Knowledge and Application	hours ۲	The eighth

Practical and daily exams	Theoretical and practical lectures	Artificial intelligence and the future of humanity	Knowledge and Application	hours ٢	The ninth
Practical and daily exams	Theoretical and practical lectures	Ethics of artificial intelligence	Knowledge and Application	hours ٢	The tenth
Practical and daily exams	Theoretical and practical lectures	Artificial ,intelligence privacy, and surveillance	Knowledge and Application	hours ٢	Eleventh
Practical and daily exams	Theoretical and practical lectures	Recent research and emerging technologies in the field of artificial intelligence	Knowledge and Application	hours ٢	twelfth
Practical and daily exams	Theoretical and practical lectures	expectations in intelligence and the role of smartphones	Knowledge and Application	hours ٢	thirteenth
Practical and daily exams	Theoretical and practical lectures	The role of intelligence in smartphones	Knowledge and Application	hours ٢	The fourteenth
Practical and daily exams	Theoretical and practical lectures	Future directions in the field of artificial intelligence	Knowledge and Application	hours ٢	The fifteenth

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library

Required textbooks (curriculum (books, if available

1. Computer Fundamentals 2. Introduction to Information Technology	Main references (sources)
1. Discovering Computers 2. Microsoft Office 3. Visual Studio Code	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Crimes of the Ba'ath regime in Iraq
٢- Course code
NTU203
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator

Name: Rabah Muhammad Farih :e-mail abahfrayyih@gmail.com					
Λ- Course Objectives					
Identifying the crimes of the Ba'ath regime according to the law of the Iraqi High Criminal Court For the year 2005 AD					
᠑- Teaching and learning strategy					
1. :The interactive lecture is used to explain • questions Asking • Involving students in the discussion • Display of historical documents and photographs 2. :Research-based learning costs the student • Preparing reports on specific historical events • Gathering information from sources • Analysis of historical documents and testimonies 3. Using educational tools • films Documentary • Maps and images • presentations • Official documents and human rights reports 4. methods Assessment • Short tests • Research and reports • Participate in the discussion • Analytical discussions of events					

᠑᠐- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week

,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	concept Crimes	Knowledge	hours ٢	the first
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	identification The crime language Technically	Knowledge	hours ٢	the second
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Sections ,Crime crimes The Baath	Knowledge	hours ٢	the third
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Types Crimes International Decisions Issued from The court criminal	Knowledge	hours ٢	Fourth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Psychological and social crimes and their effects	Knowledge	hours ٢	Fifth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	mechanisms Crimes Psychology And it caused Crimes Psychology	Knowledge	hours ٢	Sixth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Crimes social	Knowledge	hours ٢	Seventh
,Daily tests monthly tests	Theoretical lectures And the offer	violations Laws Iraqi	Knowledge	hours ٢	Eighth

	Smart screens				
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Crimes environmental	Knowledge	hours ٢	Ninth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	destruction cities and villages	Knowledge	hours ٢	tenth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	dredging The marshes	Knowledge	hours ٢	eleventh
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	dredging orchards and palm trees	Knowledge	hours ٢	twelfth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Mass grave crimes	Knowledge	hours ٢	thirteenth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	Classification Time cemeteries genocide collective	Knowledge	hours ٢	fourteenth
,Daily tests monthly tests	Theoretical lectures And the offer Smart screens	pollution Al-Harbi and radioactive	Knowledge	hours ٢	fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Crimes of the Ba'ath regime in Iraq	Main references (sources)
Human rights and violations in contemporary Iraq	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Electronic circuits ١
٢- Course code
MDDI201
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤

Υ- Name of the course coordinator
Name: Muhannad Tahseen Hamdi :e-mail eng.muh@ntu.edu.iq
Λ- Course Objectives
Building practical electronic circuits, studying their properties and applications , and identifying and developing the student's ability to .identify errors in connecting electronic circuits
ϑ- Teaching and learning strategy
1. Electronics teaching strategy • The teaching methods of the subject rely on combining more than one method to achieve practical .understanding • Interactive learning involves discussing topics in a .conversational manner • Practical training involves conducting laboratory .experiments on electronic circuits 2. Educational objectives • Understanding the basic components of electronics • Analysis of simple and complex circuits and creation of designs and projects • Linking the theoretical aspect with the practical aspect 3. Educational resources • Smart board • Electronics Lab 4. Assessment methods • Theory tests • Laboratory reports • Practical project evaluation

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	M. Magnifiers ability ClassA amplifiers ability ClassB amplifiers ability ClassC	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	Equipment ability	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	organizations voltage B using resistance variable Zener diode transistor link	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third

		Tawal Y Parallelism, Darlington			
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	Tharester Ways glass and extinguishing Tharester Ways glass The Gate (AC) , circuit(DC) , , Pulses Applications For the unified Tuberculosis	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	The fourth
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	oscillators Definition of feedback and its types- with fee Her plans and finding Relations Special Sports Final enlargement For the system earning)) – Forward) (Rear gain circle Returns((Terms Fluctuation Examples– - on Circles Oscillators) LC oscillator- Hartley Oscillator Colpitos oscillator displacement	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth

		Al-Tur			
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	transistor As a key specifications currency on-line Pregnancy His response wave Input-rectangular time Transformation Vibrators- And its types (Different) Mono Stability not stable bilateral Stability(Relationships- Sports resistances The mosque The rule– The problem Input waveform And the exit Its circles her cup an idea Her work Protecting it- Overcoming On the potential distortions Its occurrence in Signals Directing control By offer-pulses	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
Daily ,reports exams, and	Theoretical lectures displayed on the	Oscillators and their definition -Feedback and its types	Knowledge and Application		Seventh

practical exercises	smart screen	with drawing their diagrams and finding the mathematical relationships for the final amplification of the system(forward gain-backward gain - feedback circuit) – Conditions for oscillation– Examples of– Hartley LC – oscillator Oscillator circuits(oscillator Colpitts oscillator-phase shift oscillator		hours 2 (theory) hours 2 (practical)	
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	The transistor as a switch– its operating specifications on a load line– its response to a rectangular input waveform – its switching – times oscillators and their different types(, monostable unstable, bistable) –	Knowledge and Application	hours 2 (theory) hours 2 (practical)	Eighth

		mathematical relationships– collector and – base resistors input and output waveforms and their circuits– their triggering and operational principles– their protection – overcoming potential distortions in output signals– width control Pulses.			
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	Oscillators and their definition -Feedback and its types with drawing their diagrams and finding the mathematical relationships for the final amplification of the system(forward gain-backward gain - feedback circuit) – Conditions for oscillation– Examples of– Hartley LC – oscillator Oscillator	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	The ninth and tenth

		circuits(oscillator Colbuts oscillator- phase shift oscillator			
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	RL-RC - TransientDC - Transient states - in circuits TransientRLC	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	Operational Amplifier- Typical Diagram: Input - Input- Impedance- Output- Gain- Voltage fromN and Equation Zooming in- Host- Number addition equation Entries- Host is not a template.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Twelfth and thirteenth
Daily ,reports exams, and practical exercises	Theoretical lectures displayed on the smart screen	The collector circuit and the output equation of the collector circuit Non-inverter and output equation- calculation . examples	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourteenth and fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Electronic devices and circuit theory	Main references (sources)
Electronic principles	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Microcomputers ١
٢- Course code
MDDI202
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Marwa Bashir Fathi

:Email addressengmaldouri90@gmail.com

Λ- Course Objectives

Training the student to use computer keys and type Implementing programs in machine language

᠑- Teaching and learning strategy

1. Course objectives

- Understanding the concept of microcomputers and microprocessors
- Understanding the structure of the microprocessor and its internal components
- Learn assembly language and processor programming
- Performing arithmetic and logical operations using software
- and data commands are executed Understanding how is stored in memory
- Developing programming, analysis, and problem-solving skills

2. Interactive lectures

- questions Discussion and asking
- Using practical examples
- Explanation of the steps for implementing the program

3. Practical education

- Writing programs in assembly language
- Performing calculations
- Handling memory and ports

4. Cooperative education

The students were divided into groups in order to

- Program writing
- bugs Detecting software
- Implementing practical experiments

5. Educational resources

- computer
- Projector
- Processor and memory diagrams

6. methods Assessment

- Short tests
- Homework
- questions Oral and written

- Writing and implementing programs
- Evaluating practical experiences

١٠ - Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports theory – exams daily exams	Lectures Theory And the process	Introduction to course syllabus and grade distribution - Examination Number Systems Decimal System - - Binary System - - Octal System Hexadecimal System and its importance for – microcomputers Conversion .between systems	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first

,Reports theory – exams daily exams	Lectures Theory And the process	An introduction to ,microcomputers their types, and their relationship .to computers Other electronic	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	the second
,Reports theory – exams daily exams	Lectures Theory And the process	Definitions of microcomputer ,terminology: bit ,byte, nibble ,word, instruction ,program , software ,structures languages High-level languages - Low- - level languages Assembly - language Language The machine	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	the third
,Reports theory – exams daily exams	Lectures Theory And the process	Microcomputer – architecture – block diagram – input unit – keyboard mouse – two types of mouse and a comparison – between them .port Input	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourth

,Reports theory – exams daily exams	Lectures Theory And the process	Transportation system Data bus – Address bus – Control lines Control – the – benefit of each a comparison .between them	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
,Reports theory – exams daily exams	Lectures Theory And the process	- Output Unit Monitor - The difference between a computer monitor and a screen - Television .Output Portal	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
,Reports theory – exams daily exams	Lectures Theory And the process	Memory- Main Memory- Read-Only Memory- Read/Write Memory- Comparison between them- Accessory Memories and the difference between them Main memory.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
,Reports theory – exams daily exams	Lectures Theory And the process	Central) Processing Unit (CPU- Microprocessor- Definition- 8085 - Block Diagram Shows Microprocessor Architecture- Microprocessor A boundary	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth

		diagram and a block diagram of itData transmission buffers Address – carrier buffers and a comparison between them.			
,Reports theory – exams daily exams	Lectures Theory And the process	(Accumulator)– Unit of Arithmetic and Logic A General Records –Register – Example Arithmetic–8085 Media Registry– Informing the microprocessor to determine the state of each flag and interpret the state- Log benefit The media	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
,Reports theory – exams daily exams	Lectures Theory And the process	Z-80 microprocessor's display , the microprocessor's display shows the PC stack indicator. – Example calculation– Program abacus 8085 Command log- Command decoder- SP controlunit	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
,Reports theory	Lectures	8085-Z80 :Memory Codes Microprocessor	Knowledge and Application		eleventh

– exams daily exams	Theory And the process	Instructions Used – Machine Language– Comparison Between Them– How to Extract Them The codes are in machine language from the instruction table.		hours ۲ (theory) hours ۲ (practical)	
,Reports theory – exams daily exams	Lectures Theory And the process	Data Transfer Group Instructions and Their Types- Solving Examples- Writing A program that protects.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth
,Reports theory – exams daily exams	Lectures Theory And the process	Input and output instructions and their relationship to transfer group instructions Data– practical examples	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
,Reports theory – exams daily exams	Lectures	A set of arithmetic commands and	Knowledge and Application	hours ۲ (theory)	fourteenth

	Theory And the process	their types- practical examples- Its use in amplifying digital signals with a practical example .		hours ۲ (practical)	
,Reports theory – exams daily exams	Lectures Theory And the process	Logical Instructions and Their Types- Practical Examples- And its use in solving digital circuits.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department library	Required textbooks (curriculum books, if available)
• Microprocessor Fundamentals book • Programming 8085 • Assembly language and microprocessor books	Main references (sources)
• INTEL Microprocessor Manuals	Recommended books and references (scientific journals and ...reports)

References for digital systems and microcomputers	
Official website of the department	Electronic references and websites

١- Course Name
Electronic medical devices ١
٢- Course code
MDDI203
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Musa Yassin Hamid :Email addressmosaaliraqi@gmail.com
٨- Course Objectives
٩- Teaching and learning strategy
1. The interactive lecture takes place during which Displaying images and diagrams of devices

- Asking questions and engaging in discussions
 - Explanation of the medical and electronic functions of each device
2. Practical and applied education
 - components Practical identification of device
 - inside the laboratory the equipment Operating
 - Training on connecting the sensors
 - signals Measuring and analyzing medical
 3. Problem-based learning
 - Diagnosing virtual faults
 - Proposing maintenance solutions
 - signals of abnormal of the causes Analysis
 4. Cooperative learning: Students are divided into groups
 - Device testing kit
 - Electronic circuit analysis kit
 - A collection explaining medical use
 5. Demonstrations and educational media
 - operation videos Device
 - Electronic circuit diagrams
 - EducationalPowerPoint presentations
 6. Educational resources
 - devices inside the laboratory Real medical
 - Computer and projector
 - Educational electronic circuits
 - Medical probes and electrodes
 - Images and diagrams
 7. methods Assessment
 - Short theory tests
 - Laboratory reports
 - device operation Practical evaluation of
 - Discussions and questions
 - Project or presentation on a medical device

١٠ - Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	introduction on Devices Medical Electronic identification- Devices Medical And its types	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	Terminology Medical In English In Latin - Terminology Medical and Devices Medical	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device rotation Parts the heart The course - bloody The Great And the minor	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device planning HeartECG Stages - Basic For the device	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Fourth

,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device planning HeartECG Poles - device Planning and Meet them the patient	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	measurement pressure blood - Types devices the pressure - device the pressure mercurial	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	measurement pressure blood device - the pressure Antenna device - the pressure electronic	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device The tremor heart - device The tremor heart And its types	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device The tremor heart - poles devices The tremor - Circles devices The tremor	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides	organizer Strikes the heart - Classification	Knowledge and Application	hours ۲ (theory)	tenth

	practical experiments	- device the heart - lungs		hours ۲ (practical)	
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device measurement voices the heart - vector Heart VCG	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	devices breathing - Mechanical breathing	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	Sensors devices measurement Respiratory devices monitoring breathing Sensors devices measurement breathing devices monitoring breathing	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	device Monitoring Clinical	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
,Reports theory – exams daily exams	,Whiteboard PowerPoint ,slides practical experiments	The device Nervous Central - How distribution Feeling And the orders Voluntary involuntary	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
• Medical Instrumentation: Application and Design • Introduction to Biomedical Equipment Technology)	Main references (sources)
John G. Webster	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Medical Equipment Maintenance Workshop ١
٢- Course code
MDDI204
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Musa Yassin Hamid :e-mail mosaaliraq38@gmail.com
٨- Course Objectives
• Understanding the principles of medical and electronic device maintenance • and diagnosis skills fault detection • . equipment Learn how to use measuring and testing • Developing skills in disassembly, assembly, and preventive maintenance Training students in occupational safety within the workshop
٩- Teaching and learning strategy
1. ,The interactive lecture involves discussion with students presentation of real-life examples of malfunctions, and .display of images and videos • malfunctions Electronic Types • components device medical • Preventive and therapeutic maintenance methods 2. Practical training within the laboratory • testing device Medical

- of the and parts within electronic circuits faults Tracing device
 - Disassembling and assembling components
 - Training students in actual maintenance
3. Cooperative education
- :Dividing students into groups in order to
- inspection Device
 - Carrying out maintenance work
 - fault reports Preparing
4. Educational resources
- devices medical training
 - devices Electronic measuring
 - Projector
 - tools Maintenance, dismantling and installation
5. methods Assessment
- Short tests
 - Duties and Reports
 - questions Oral
 - Maintenance implementation evaluation
 - inspection and diagnosis Fault
 - repair after the devices Operating
 - evaluation within the laboratory Performance

Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests Exercises and reporting	Theoretical lectures	Clarifying the requirements for electronic device ,repair workshops the necessary tools , and training reviewing maintenance methods , and testing(by senses, devices, and signal .(injection Industrial . safety and security	Knowledge and Application	hours ٢	the first
Daily tests Exercises and reporting	Theoretical lectures	A review of the block diagram for the Superheterodyne radio– and the .printed circuit board Using measuring devices to identify the fault	Knowledge and Application	hours ٢	the second
Daily tests Exercises and reporting	Theoretical lectures	Practice using the Superheterodyne radio schematic and locating components– practice applying the schematic to the printed circuit board and performing tests The crisis.	Knowledge and Application	hours ٢	the third

Daily tests Exercises and reporting	Theoretical lectures	Practice troubleshootingAF- (audio frequency phase) faults Amplifier malfunctions Primary and power amplifier.	Knowledge and Application	hours ۲	Fourth
Daily tests Exercises and reporting	Theoretical lectures	Practice troubleshooting the) Inter-Frequency IF) stage and detector– amplifier faults Intermediate and detector– Adjusting and regulating the inter- frequency phase.	Knowledge and Application	hours ۲	Fifth
Daily tests Exercises and reporting	Theoretical lectures	Practice troubleshooting radio frequency (RF) stage faults - mixer faults Local oscillator malfunctions	Knowledge and Application	hours ۲	Sixth
Daily tests Exercises and reporting	Theoretical lectures	Common radio malfunctions	Knowledge and Application	hours ۲	Seventh
Daily tests	Theoretical lectures	Testing students with general	Knowledge and Application	hours ۲	Eighth

Exercises and reporting		exercises on radio malfunctions			
Daily tests Exercises and reporting	Theoretical lectures	Understanding the block diagram of a standard black and white television– Identifying models of the electronic components used and the complete units belonging to all models Stages of the device.	Knowledge and Application	hours ۲	Ninth
Daily tests Exercises and reporting	Theoretical lectures	Practice reading the TVEIC diagram identifying the , locations of ,components especially protection components and units, and applying the device diagram to the printed circuit board. Identifying hazardous work areas and how to deal with them.	Knowledge and Application	hours ۲	tenth
Daily tests Exercises and reporting	Theoretical lectures	Training on the use of television testing equipment, along with training on the use of the control and regulation keys located on the front panels. And the background.	Knowledge and Application	hours ۲	eleventh

Daily tests Exercises and reporting	Theoretical lectures	Training on troubleshooting power generation phase faults	Knowledge and Application	hours ۲	twelfth
Daily tests Exercises and reporting	Theoretical lectures	Organizing and reforming the channel selection circuit and automatic gain control(AGC). - IF phase reform and organization.	Knowledge and Application	hours ۲	thirteenth
Daily tests Exercises and reporting	Theoretical lectures	Repairing faults in the image stage and CRT screen valve	Knowledge and Application	hours ۲	fourteenth
Daily tests Exercises and reporting	Theoretical lectures	Faults in the synchronization pulse junction and the automatic frequency control (AFC) circuit.	Knowledge and Application	hours ۲	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
Comprehensive medical equipment maintenance guides	Main references (sources)

Official brochures of the World Health Organization(WHO)	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Electromechanical medical devices
٢- Course code
MDDI206
٣- Semester/Year
Second ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Falah Muhammad Abd :e-mail falah.ma@ntu.edu.com
٨- Course Objectives
qualification student To be able on use devices Maintenance And on maintenance Devices Medical from during study The device The doctor As a device electronic And from during study His circles Electronic Detailed
٩- Teaching and learning strategy
1. Course objectives - the electromechanical systems within medical devices .such as X-ray machines and dental chairs, etc - Analysis of the operation of devices, sensors and control systems

- signals to movement Linking electrical
- Acquiring maintenance and diagnostic skills for medical devices

2. teaching strategies

- أ- Case-based learning: Each topic is explained using a real .device

For example, in an X-ray machine (the movement of the (systems mechanical arm, the guidance

- ب- Practical learning

- systems in devices Study of motion
- Practical experiments in laboratories

C- Educational resources

- such as an X-ray of devices Examples and images machine
- parts for devices Genuine
- Educational videos

3. Acquired skills

- Understanding the movement of medical systems electromechanical
- devices in medical of faults Analysis
- skills and repair
- Reading charts
- systems Dealing with motion control

4. methods Assessment

- Operating a lifting system such as a dental chair
- about the operation of the device questions
- Reports for each device
- Quick tests

5. Education development

- Linking the material to training within hospitals
- devices Using real

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests Exercises and reporting	Theoretical and practical lectures	Introduction to electromechanical medical devices – X-ray machine Principles of X-rays – X-ray physics and discovery	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Daily tests Exercises and reporting	Theoretical and practical lectures	- ray machine – X-ray tube High voltage generator control –) unitKV, mA, Sec.)	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
Daily tests Exercises and reporting	Theoretical and practical lectures	Manual and automatic film processors Radiographic scanning – device – generations components	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third
Daily tests Exercises and reporting	Theoretical and practical lectures	– Viewing device components NMR (Magnetic Resonance Imaging) machine	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Fourth
Daily tests Exercises and reporting	Theoretical and practical lectures	Magnetic Resonance Physics – Device Components Dental equipment – its components – air and water cycles – the .compressor	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Fifth

Daily tests Exercises and reporting	Theoretical and practical lectures	Dental chair – control circuits Physiotherapy equipment – Wax bath device	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
Daily tests Exercises and reporting	Theoretical lectures and process	Physical therapy equipment – ultrasound .machine Physiotherapy equipment - Shortwave device - Microwave .device	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
Daily tests Exercises and reporting	Theoretical lectures and process	Physiotherapy equipment – Electrical stimulation device Baby incubator system	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
Daily tests Exercises and reporting	Theoretical and practical lectures	Temperature control system for a baby .incubator Artificial kidney machine – solution .cycle	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
Daily tests Exercises and reporting	Theoretical and practical lectures	Artificial kidney machine – blood circulation Artificial kidney device – types of filters	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
Daily tests Exercises and reporting	Theoretical and practical lectures	Artificial kidney machine – water filtration device - Anesthesia - equipment components of the central processing	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh

		unit or cylinders for .anesthetic gas			
Daily tests Exercises and reporting	Theoretical and practical lectures	– Medical gas network .central oxygen system – Central systems nitrous oxide – for compressed air – for expelling anesthetic .gases	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth
Daily tests Exercises and reporting	Theoretical and practical lectures	Laboratory equipment .centrifuge – - Electronic scale .equipped	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
Daily tests Exercises and reporting	Theoretical and practical lectures	- Spectrophotometer Acidity and alkalinity .measuring device Hemoglobin measuring - device Chlorine measuring .device	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
Daily tests Exercises and reporting	Theoretical and practical lectures	– Autolysis device :Device components Lithotripsy device	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum books, if available)
Introduction to Biomedical Equipment Technology (by	Main references (sources)

Joseph J. Carr and John M. Brown	
Medical Instrumentation: Application and Design (by John G. Webster	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
control
٢- Course code
MDDI112
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Ghaith Thaer Fadel

:e-mail [Ghaith .tf@ntu.edu.iq](mailto:Ghaith.tf@ntu.edu.iq)

Λ- Course Objectives

Teaching the basic concepts of different control systems, operating the devices and machines used in them, and dealing with the .control system in factories

᠑- Teaching and learning strategy

1. Course objectives

- Understanding the fundamentals of open and closed-circuit control systems
- conversion analysis between electrical and Signal mechanical systems
- devices Identifying error detection
- Study of electrical components for control
- ,Measuring industrial variables (temperature, pressure (flow, level
- Application for controlling the on/off operation of a phase induction motor
- Understanding digital and pneumatic control systems

2. Understanding and application-based education

- Explaining the concepts theoretically and then applying them practically
- Example: A comparison between open and closed .systems through a practical experiment

3. Practical (laboratory) education

- Experiments on temperature and pressure sensors
- Operating a phase induction motor
- Control circuits (relay, timer)

4. Educational resources

- Training boards
- real sensors
- engines

5. Acquired skills

- analysis systems Control
- Control circuit design
- Using sensors
- Maintenance skills

6. methods Assessment

- Short tests

- Control circuit operation
- measuring variables
- Laboratory reports

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily test reports	Theoretical lectures	introduction on Systems control	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Daily test reports	Theoretical lectures	Systems control Open The circuit and closed The circuit	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
Daily test reports	Theoretical lectures	transformation Signs Electric to Mechanical Conversely, transformation Signs Electric to air And vice versa	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third

Daily test reports	Theoretical lectures	devices Sensitivity The mistake Used in control, Types	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourth
Daily test reports	Theoretical lectures	the components Electric control on Electric motors- Pickup- Timer Time-Keys Variables The four degree Heat- Pressure-Flow- Measurement Level in systems Pressure control- keys Specific	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
Daily test reports	Theoretical lectures	Variables The four degree Heat- Pressure-Flow- Measurement Level in systems control	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
Daily test reports	Theoretical lectures	control on employment and extinguishing engine inductive phase one Using A- Electromagneticat B- Ethyrostet-Trike	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
Daily test reports	Theoretical lectures	supplement Systems Applied	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
Daily test reports	Theoretical lectures	Systems Digital in control	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
Daily test reports	Theoretical lectures	Ways measurement degree the heat and pressure and flow and level	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
Daily test reports	Theoretical lectures	elements Different pneumatic control systems	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh

Daily test reports	Theoretical lectures	Systems Applied in control Air	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Twelfth Thirteenth
Daily test reports	Theoretical lectures	Use Analog calculator in control	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	,Fourteenth fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department library	Required textbooks (curriculum books, if available)
• Modern Control Engineering - Katsuhiko Ogata • Control Systems Engineering - Norman S. Nis	Main references (sources)
Automatic Control Systems - Benjamin C. Kuo	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

۱- Course Name

Renewable energy systems

۲- Course code

MDDI214

٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٤٥) hours per week ٣
٧- Name of the course coordinator
Name: Falah Muhammad Abd :Email addressfalah.ma@ntu.edu.com
٨- Course Objectives
Understanding the fundamentals of different renewable energy sources and the technologies required for their associated energy systems
٩- Teaching and learning strategy

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports daily exams	Theoretical lectures	General introduction to renewable energy – renewable energy sources and their applications Renewable energy and environmental problems– The	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	the first

		sun – Time calculation(time equation Correcting the longitude line			
,Reports daily exams	Theoretical lectures	Solar angles(deviation- hour angle at sunrise and sunset and - day lengthangle of occurrence) Solar radiation in space- Terrestrial radiation- Total radiation on inclined surfaces	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	the second
,Reports daily exams	Theoretical lectures	Solar water heating systems– Thermosiphon system– Solar collector with connected tank	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	the third
,Reports daily exams	Theoretical lectures	Rotation system Live Indirect water heatingssystem for tanks	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Fourth
,Reports daily exams	Theoretical lectures	Storage systems Heat storage system in the air– Heat tank system with liquids– Analysis thermal Storage systems	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Fifth
,Reports daily exams	Theoretical lectures	Quantity of hot water Required – Requirements pipe process– Stabilizers	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Sixth

		Insulators pumps Valves– Other Devices			
,Reports daily exams	Theoretical lectures	Solar cells Components of an electrical generation system	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Seventh
,Reports daily exams	Theoretical lectures	PV ,system design hybrid systempv/t	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Eighth
,Reports daily exams	Theoretical lectures	Solar thermal power generation systems polishes Parabolic trough- Energy systems of the living Lord	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Ninth
,Reports daily exams	Theoretical lectures	Introduction to wind energy Energy not available in wind Turbine torque and power Air	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	tenth
,Reports daily exams	Theoretical lectures	Wind energy conversion systems– Electric generators Air – Rotating winds Power regulators– Shutdown systems– The birth	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	eleventh
,Reports daily exams	Theoretical lectures	wind power conversion systems Energy providers for the	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	twelfth

		Torin Antenna– Capacity factor			
,Reports daily exams	Theoretical lectures	Introduction to wind turbines	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	thirteenth
,Reports daily exams	Theoretical lectures	to geothermal energy– underground power plants(stations thermal(Electrical stations Geothermal (pumping system	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	fourteenth
,Reports daily exams	Theoretical lectures	tidal energy and the islands– stations The tide Islands are the energy of waves– Wave energy stations	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	fifteenth

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
Principles of Renewable Energy Book	Main references (sources)

Solar Energy Engineering – Processes and Systems (Soteris Kalogirou)	
- Journal of Renewable Energy and Environment (JREE): - Renewable and Sustainable Energy Journal(AIP Publishing)	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Arabic
٢- Course code
NTU202
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)

(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Muhammad Abdul Qadir Hamad :e-mail Mohamed.qader77@gmail.com
٨- Course Objectives
It aims to Enabling students from skills the language Arabic and its issues in Its levels All: ,audio ,And morphology ,Grammar ,And semantics ,Stylistics And the scriptures
٩- Teaching and learning strategy
- Teaching objectives - subject and) basic grammar rules Understanding the (... ,predicate, agent, object - intransitive and) verbs Distinguishing between (transitive - Mastering Arabic grammar and its signs - Use of pronouns - stage-based learning based on modeling) Teaching strategy (and progression - Lesson steps - Modeling (I explain and solve) - Participating with the student (we solve together) - Gradation (various examples) - The individual application includes solving exercises such as parsing, identifying verb types, and .extracting pronouns - directly on Answers are written :Instant correction and clarified mistakes are explained the board, and .quickly - method Evaluation - A quick question after each point - A short exercise at the end of the lesson - simple duty - Quick tests

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests	Theoretical lectures	The subject And the news	Knowledge	hours ٢	the first
Daily tests	Theoretical lectures	The verb And the doer And the effect With him	Knowledge	hours ٢	the second
Daily tests	Theoretical lectures	The verb Necessary and the transgressor	Knowledge	hours ٢	the third
Daily tests	Theoretical lectures	pronouns	Knowledge	hours ٢	The fourth
Daily tests	Theoretical lectures	Signs Grammar Original And the branch	Knowledge	hours ٢	Fifth
Daily tests	Theoretical lectures	Actions The five	Knowledge	hours ٢	The sixth
Daily tests	Theoretical lectures	letters Compassion and their meanings	Knowledge	hours ٢	The seventh
Daily tests	Theoretical lectures	Hamza Connection And the pieces	Knowledge	hours ٢	The eighth and ninth
Daily tests	Theoretical lectures	letters Appendix	Knowledge	hours ٢	tenth
Daily tests	Theoretical lectures	Nun And tanween	Knowledge	hours ٢	Eleventh Twelfth

Daily tests	Theoretical lectures	speech Administrator	Knowledge	hours ٢	thirteenth
Daily tests	Theoretical lectures	Most famous Mistakes Linguistic The rumor	Knowledge	hours ٢	Fourteenth and fifteenth

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

https://archive.org/details/a2148n?utm_source=chatgpt.com

Required textbooks curriculum books, if) (available

https://www.noor-book.com/en/ebook-Grammar-of-the-Arabic-Language-%D8%A7%D9%84%D9%86%D8%AD%D9%88--pdf?utm_source=chatgpt.com

Main references (sources)

https://foulabook.com/ar/book/%D9%85%D8%B1%D8%AC%D8%B9-%D8%A7%D9%84%D8%B7%D9%84%D8%A7%D8%A8-%D9%81%D9%8A-%D9%82%D9%88%D8%A7%D8%B9%D8%AF-%D8%A7%D9%84%D9%86%D8%AD%D9%88-pdf?utm_source=chatgpt.com www.sciencedirect.com	Recommended books and references scientific journals and) (...reports
Official website of the department	Electronic references and websites

١- Course Name
Professional ethics
٢- Course code
NTU204
٣- Semester/Year
Second / ٢٠٢٥-٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Hassan Mohamed Hassan :e-mail hasan.alibory@ntu.edu.iq
٨- Course Objectives

1. The course aims to introduce students to professional ethics according to their technological and technical specializations
2. Informing them of the rules of professional ethics and strengthening their commitment to them
3. Obliging them to adhere to ethical standards in their field of work after graduation

٩- Teaching and learning strategy

1. Course objectives
 - ,Establishing professional values (honesty (responsibility, respect for others
 - Understanding the evolution of professional ethics across civilizations
 - Developing proper professional conduct in the workplace
 - Acquiring interpersonal skills, especially with patients
2. Basic professional ethics
 - Honesty
 - Professional confidentiality
 - Respect
3. The method adopted in education
 - Interactive learning
 - practical application
 - Linking the material to reality
4. Cooperative education
 - Dividing students into groups
 - ,Each group discusses the topic of (values, behavior (dealing with the patient
5. teaching methods
 - PowerPointpresentations
 - Educational videos
 - Smart board
6. Assessment methods
 - Student participation
 - Homework assignments, for example, analyzing a moral situation
 - Daily tests

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily and monthly exams	Theoretical and practical lectures	Principles of professional ethics in the stages of civilizational development Principles of professional ethics in Arab and Islamic civilization Etiquette of - dealing with patients in hospitals from ancient times until .now	Knowledge and Application	hours ٢	the first
Daily and monthly exams	Theoretical and	Professional conduct: its ,definition, concept	Knowledge and Application	hours ٢	the second

	practical lectures	practical applications, and the relationship between employees and .their superiors			
Daily and monthly exams	Theoretical and practical lectures	Basic professional ethics The - characteristics of professional ethics as a guide and .mentor for behavior How to utilize - professional ethics as a guide to an individual's Characteristics - and qualities of :healthcare workers ,appearance behavior, and commitment. - The patient's moral and - legal rights Interacting with patients and their companions in a manner appropriate .to their behavior	Knowledge and Application	hours ٢	the third
Daily and monthly exams	Theoretical and practical lectures	Human-interactive behavioral ,patterns: definition ,nature, motivations	Knowledge and Application	hours ٢	Fourth

		interpretations, and .influencing factors			
Daily and monthly exams	Theoretical and practical lectures	Communication methods (linguistic - (and non-linguistic ,definition, types effects, designing successful communication methods How do - communication methods affect ,behavior, listening and how can one practice them, with ?practical examples	Knowledge and Application	hours ۲	Fifth
Daily and monthly exams	Theoretical and practical lectures	Behavioral trends .and tendencies ,Its definition - ,classification ,factors affecting it and methods of .measuring it	Knowledge and Application	hours ۲	Sixth
Daily and monthly exams	Theoretical and practical lectures	,Values, customs .and traditions ,Its definition - ,classification ,factors affecting it and methods of .measuring it	Knowledge and Application	hours ۲	Seventh
Daily and monthly exams	Theoretical and practical lectures	Personality types and how to deal .with them Definition of - personality - its types - its relationship to the .profession	Knowledge and Application	hours ۲	Eighth

		The technician's personality and characteristics			
Daily and monthly exams	Theoretical and practical lectures	Conditions for improving mental health Its definition, the - ,factors affecting it prevention of mental illness, the role of mental health in vocational .preparation	Knowledge and Application	hours ۲	Ninth
Daily and monthly exams	Theoretical and practical lectures	Conditions for professional compatibility and the associated working .relationship ,Its concept conditions, and professional unavailability	Knowledge and Application	hours ۲	tenth
Daily and monthly exams	Theoretical and practical lectures	Job description for graduate work	Knowledge and Application	hours ۲	eleventh
Daily and monthly exams	Theoretical and practical lectures	Patient behavior Receiving the - patient, dealing with them, gaining their trust, and maintaining professional .confidentiality Setting dates for - the required procedure	Knowledge and Application	hours ۲	twelfth

		Preserving the - patient's .belongings			
Daily and monthly exams	Theoretical and practical lectures	Behavioral behavior in dealing with medical devices and equipment Daily inspection of - ,equipment, tools solutions, and other ,requirements preparing them for daily operation, and ,maintaining preserving, and .protecting them Preparing the - necessary medications for the job and handling .them properly	Knowledge and Application	hours ۲	thirteenth
Daily and monthly exams	Theoretical and practical lectures	Occupational safety Prevention of workplace hazards and accidents Prevention of the ,risks of bacterial toxic, and radioactive contamination Prevention of the risk of infection with contagious and infectious diseases Avoid wrong - practices in the .workplace	Knowledge and Application	hours ۲	fourteenth

Daily and monthly exams	Theoretical and practical lectures	Applications in professional .conduct Field visits to - hospitals and other health institutions to observe and exchange experiences and information	Knowledge and Application	hours ٢	fifteenth
-------------------------	------------------------------------	--	---------------------------	---------	-----------

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
Books on general professional ethics, books on medical ethics, books on ,organizational behavior introduction to professional ethics	Main references (sources)
.Professional Ethics – Dr Abdul Rahman Al-Issawi Work Ethics – Dr. Mohamed Atef	Recommended books and references (scientific journals and (...reports

.Professional Ethics – Dr Ahmed Shafiq Al-Khatib	
Official website of the department	Electronic references and websites

١- Course Name
Measuring devices
٢- Course code
MDDI200
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Riyadh Rajab Mahmoud
:Email address riyadhrajabmm@gmail.com
٨- Course Objectives
Study of the types of devices used for electrical measurements Continuous and alternating
٩- Teaching and learning strategy

1. Identifying laboratory equipment
 - .The method is a live demonstration with an experiment
 - Identifying devices and their functions
 - Compare the device with a reference device and .identify the error
 - Experience + Comparison
2. teaching methods
 - Real devices
 - Smart board and display
 - Educational videos
3. Assessment methods
 - Evaluate student performance within the laboratory
 - Laboratory reports

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests	Theoretical and practical lectures	Identifying laboratory equipment	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Daily tests	Theoretical and practical lectures	Errors in measurements	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
Daily tests	Theoretical and practical lectures	Measuring galvanometer sensitivity	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third
Daily tests	Theoretical and practical lectures	Resistance measurement Interior For a moving-coil galvanometer with a stress - segmenting method	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Fourth

Daily tests	Theoretical and practical lectures	Measuring the internal resistance of a galvanometer The moving coil in the middle of the gradient	Knowledge and Application	hours 2 (theory) hours 2 (practical)	Fifth
Daily tests	Theoretical and practical lectures	Ohmmeter Succession	Knowledge and Application	hours 2 (theory) hours 2 (practical)	Sixth
Daily tests	Theoretical and practical lectures	Ohmmeter parallelism	Knowledge and Application	hours 2 (theory) hours 2 (practical)	Seventh
Daily tests	Theoretical and practical lectures	Wheatstone bridge DC for measuring unknown resistance	Knowledge and Application	hours 2 (theory) hours 2 (practical)	Eighth
Daily tests	Theoretical and practical lectures	Half bridge for the current Continuous To measure the internal resistance of a galvanometer	Knowledge and Application	hours 2 (theory) hours 2 (practical)	Ninth
Daily tests	Theoretical and practical lectures	Double Kelvin bridge for DC	Knowledge and Application	hours 2 (theory) hours 2 (practical)	tenth
Daily tests	Theoretical and practical lectures	Ammeter Direct current and extending its range	Knowledge and Application	hours 2 (theory) hours 2 (practical)	eleventh
Daily tests	Theoretical and practical lectures	Dual-beam oscilloscope	Knowledge and Application	hours 2 (theory) hours 2 (practical)	twelfth

Daily tests	Theoretical and practical lectures	calibration Ammeter Digital oscilloscope	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
Daily tests	Theoretical and practical lectures	Calibrating a digital voltmeter using a device oscilloscope	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
Daily tests	Theoretical and practical lectures	Voltmeter Current Continuous And expanding its range	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department library	Required textbooks curriculum books, if) (available
- Electrical and Electronic Measurements instrumentation – AK Sawhney - Electrical and Electronic Measurements- David A. Bell	Main references (sources)
- Measurements(Elsevier Journal) - Sensors Journal (IEEE)	Recommended books and references (scientific journals (...and reports
Official website of the department	Electronic references and websites

١- Course Name
Electronic circuits ٢
٢- Course code
MDDI207
٣- Semester/Year
Second / ٢٠٢٥-٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Muhannad Tahseen Hamdi :Emaileng.muh@ntu.edu.iq
٨- Course Objectives
1- Building electronic circuits and studying their properties and applications 2- Developing the student's ability to identify errors in connecting electronic circuits
٩- Teaching and learning strategy
5. Electronics teaching strategy - The teaching methods of the subject rely on combining more than one method to achieve practical understanding - Interactive learning involves discussing topics in a conversational manner - Practical training involves conducting laboratory experiments on electronic circuits 6. Educational objectives

- Understanding the basic components of electronics
 - Analysis of simple and complex circuits and creation of designs and projects
 - Linking the theoretical aspect with the practical aspect
7. Educational resources
- Smart board
 - Electronics Lab
8. Assessment methods
- Theory tests
 - Laboratory reports
 - Practical project evaluation
 - Homework assignments for solving circuits and designing circuits

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	circle The presenter and equations the account To propose voltage Applied Circle $V_O = V_2 V_1$ input	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Applications amplifier Integrated processes His circle Derivation- The equation Private With him example Input wave square to-circle The place for and finding a wave Directing she has like- Input Pulsating to circle The integrated and finding wave Directing example impact Integrated voltage Solving exercises	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	Second and third
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Comparative His circle - an idea Work - Input wave Triangular to	Knowledge and Application		A. The fourth

		Input template and link Input not template to Land - Input wave Triangular to Input Template- and link Input not template to Reference voltage Positive		hours ۲ (theory) hours ۲ (practical)	
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Applications No linearity of the amplifier - Operations ingredient - Example The idea from Use amplifier Operations Circles Calendar- its advantages over Circles The without Magnifier– the job at comparison between Properties Ideal imperfect - For the rectifier circuit ingredient Example half - Moji an idea His work department - ingredient Example	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	The fifth

		complete The guide The idea – of the work			
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	striker - Schmitt The Transformation The liar in Comparative And how to prevent – Its occurrence Example - Circle glass Schmidt drew Properties Conversion she has Example - Input wave Random to circle Qadih Schmitt And he drew Output voltage Solution exercises.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Generators The wave Using amplifier - Operations Generator The wave square - His circle deriving The equation Private hesitantly wave Directing Modification The circle to give wave - Rectangular example Circuit design	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh

,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Generator pulse vibrator single Stability His - circle an idea - the job fee - Waves deriving The equation Private Presentation pulse Directing Example Design for a circle -	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	The eighth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Generator The wave Triangle – – The Circle an idea -the job fee waves Derivation equations Private That Derivation equation Frequency wave Direction.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Calculator Analog – its – design examples Solved - Temporary Time 555 diagram combinations For use in Vibrators Equations account time an offer The - pulse Examples Solved.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth and eleventh
,Reports ,theoretical oral, and	,Whiteboard PowerPoint ,slides	Effective Its - advantages Its	Knowledge and Application		twelfth

written exams	practical experiments	- properties RC - filters HPF -LPF Features- Properties Equations curves - Response Examples Calculation(		hours 2 (theory) hours 2 (practical)	
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	- Its advantages BSFBPF - - effective RC filters its - properties (advantages) Properties Equations curves - Response Examples Calculation(	Knowledge and Application	hours 2 (theory) hours 2 (practical)	thirteenth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Roads Basics of manufacturing Circles Integrated (-mono) crystal Thin and thick membranes membranes(	Knowledge and Application	hours 2 (theory) hours 2 (practical)	fourteenth
,Reports ,theoretical oral, and written exams	,Whiteboard PowerPoint ,slides practical experiments	Circuit manufacturing Integrated transistor NPN - type manufacturing Resistors and capacitors - Integrated Made circle	Knowledge and Application	hours 2 (theory) hours 2 (practical)	fifteenth

		Integrated For the circle Simple .electronic			
--	--	--	--	--	--

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Electronic devices and circuit theory	Main references (sources)
Electronic principles	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Microcomputers ٢
٢- Course code
MDDI208
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤
٧- Name of the course coordinator
Name: Marwa Bashir Fathi :Email addressengmaldouri90@gmail.com
٨- Course Objectives

Using microcomputer keys and writing and executing programs in machine language

9- Teaching and learning strategy

7. Course objectives

- Understanding the concept of microcomputers and microprocessors
- Understanding the structure of the microprocessor and its internal components
- Learn assembly language and processor programming
- Performing arithmetic and logical operations using software
- and data commands are executed Understanding how is stored in memory
- Developing programming, analysis, and problem-solving skills

8. Interactive lectures

- questions Discussion and asking
- Using practical examples
- Explanation of the steps for implementing the program

9. Practical education

- Writing programs in assembly language
- Performing calculations
- Handling memory and ports

10. Cooperative education

The students were divided into groups in order to

- Program writing
- bugs Detecting software
- Implementing practical experiments

11. Educational resources

- computer
- Projector
- Processor and memory diagrams

12. methods Assessment

- Short tests
- Homework
- questions Oral and written
- Writing and implementing programs
- Evaluating practical experiences

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests	Theoretical lectures	Branching instructions and their types- conditional and unconditional and their dependence - on information practical examples- importance This group is in program writing	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Daily tests	Theoretical lectures	The control instruction set– processed by operating keys– how does it differ from the previous ?instructions	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second

Daily tests	Theoretical lectures	Programs for performing : calculations addition Subtraction- Multiplication- - DivisionThe meaning of addressing and its types in the processor	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	the third
Daily tests	Theoretical lectures	Instruction execution stages- Instruction cycle- Machine cycle- Timing diagram for executing an instruction(for example, an instruction to store the contents of the accumulator in a memory location) How to read the processor Accurate data storage in memory.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourth
Daily tests	Theoretical lectures	Creating loops- Time delay loops- Single loop– Episodes ۲– Episodes ۳– Application programs for each	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
Daily tests	Theoretical lectures	Generating pulses at a required	Knowledge and Application	hours ۲ (theory)	Sixth

		frequency and a known operating cycle (comparative) With pulse generators that use integrated circuits.		hours ۲ (practical)	
Daily tests	Theoretical lectures	Practical examples showing how to utilize time delay loops In industrial and domestic settings	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
Daily tests	Theoretical lectures	Writing a program for an ascending counter- with a practical example	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
Daily tests	Theoretical lectures	Writing a countdown timer program– with a practical example	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
Daily tests	Theoretical lectures	Writing a program for an ascending/ descending counter– with a practical example	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
Daily tests	Theoretical lectures	Specifications – Architecture– 8086 Microprocessor Layout The extremities.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	eleventh
Daily tests	Theoretical lectures	– 8086 Microprocessor Address Transfer Instructions Data-Multiplication and division	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	twelfth

		commands- Examples of other commands.			
Daily tests	Theoretical lectures	Comparison between eight- core microprocessors(such as 8086. And the sixteen- order Z80, 8085	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
Daily tests	Theoretical lectures	Rank and its main features– 32 microprocessors with The microprocessors used in Pentium computers.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
Daily tests	Theoretical lectures	General review of curriculum content	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department
library

Required textbooks (curriculum
(books, if available

• Microprocessor Fundamentals book • Programming 8085 • Assembly language and microprocessor books	Main references (sources)
• INTEL Microprocessor Manuals • References for digital systems and microcomputers	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Electronic Medical Devices ٢
٢- Course code
MDDI209
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٦٠) hours per week ٤

Υ- Name of the course coordinator	
Name: Musa Yassin Hamid :e-mail mosaaliraq38@gmail.com	
Λ- Course Objectives	
Preparing the student to be able to use maintenance equipment and maintain medical devices by studying the medical device as an electronic .device and studying its detailed electronic circuits	
ϑ- Teaching and learning strategy	
8.	The interactive lecture takes place during which • Displaying images and diagrams of devices • Asking questions and engaging in discussions • Explanation of the medical and electronic functions of each device
9.	Practical and applied education • components Practical identification of device • inside the laboratory the equipment Operating • Training on connecting the sensors • signals Measuring and analyzing medical
10.	Problem-based learning • Diagnosing virtual faults • Proposing maintenance solutions • signals of abnormal of the causes Analysis
11.	Cooperative learning: Students are divided into groups • Device testing kit • Electronic circuit analysis kit • A collection explaining medical use
12.	Demonstrations and educational media • operation videos Device • Electronic circuit diagrams • EducationalPowerPoint presentations
13.	Educational resources • devices inside the laboratory Real medical • Computer and projector • Educational electronic circuits • Medical probes and electrodes • Images and diagrams
14.	methods Assessment

- Short theory tests
- Laboratory reports
- device operation Practical evaluation of
- Discussions and questions
- Project or presentation on a medical device

١٠ - Course Structure					
Evaluation Method	Teaching method	Unit / Topic Name	Required learning outcomes	Hours	Week
Daily tests Exercises and reporting	Theoretical and practical lectures	Electroencephalography (EEG) device - basic stages of the device and its parts - brain . diseases	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the first
Daily tests Exercises and reporting	Theoretical and practical lectures	Muscle and sensory - electrical activity Muscular system	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the second
Daily tests Exercises and reporting	Theoretical and practical lectures	Electromyography (EMG) machine - basic stages of the device and its components	Knowledge and Application	hours ٢ (theory) hours ٢ (practical)	the third

Daily tests Exercises and reporting	Theoretical and practical lectures	- Ultrasound devices types	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fourth
Daily tests Exercises and reporting	Theoretical and practical lectures	Physics of ultrasound devices	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Fifth
Daily tests Exercises and reporting	Theoretical and practical lectures	Fetal monitoring device components of the - device and its operating .stages	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Sixth
Daily tests Exercises and reporting	Theoretical and practical lectures	- Birth monitoring device components of the device and its operating .stages	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Seventh
Daily tests Exercises and reporting	Theoretical and practical lectures	Tracking devices	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Eighth
Daily tests Exercises and reporting	Theoretical and practical lectures	:Sonar display devices Mode A, ModeD , ModeM.	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	Ninth
Daily tests Exercises and reporting	Theoretical and practical lectures	Speakers and their .types	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	tenth
Daily tests Exercises and reporting	Theoretical and practical lectures	:Projectors of both types analog and digital	Knowledge and Application	hours ۲ (theory)	Eleventh Twelfth

				hours ۲ (practical)	
Daily tests Exercises and reporting	Theoretical and practical lectures	Surgical cauterization devices and their types	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	thirteenth
Daily tests Exercises and reporting	Theoretical and practical lectures	Electronic circuits for surgical cauterization devices and their types	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fourteenth
Daily tests Exercises and reporting	Theoretical and practical lectures	Operating room equipment - used . devices	Knowledge and Application	hours ۲ (theory) hours ۲ (practical)	fifteenth

۱۱- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources

Available in the department
library

Required textbooks (curriculum
(books, if available

• Introduction to Biomedical Equipment Technology book By Joseph J. Carr and John M. Brown	Main references (sources)
• Handbook of biomedical instrumentation by RS Khandpur • Medical device 'manufacturers brochures	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites

١- Course Name
Medical Equipment Maintenance Workshop ٢
٢- Course code
MDDI210
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: Musa Yassin Hamid Abdul mosaaliragi38@gmail.com :e-mail

Λ- Course Objectives	
Using skills in the field of electrical appliance maintenance Equipment, fault diagnosis , and its use in the workplace	
٩- Teaching and learning strategy	
6. Course objectives	• Understanding the principles of medical and electronic device maintenance • and diagnosis skills fault detection • . equipment Learn how to use measuring and testing • Developing skills in disassembly, assembly, and preventive maintenance • Training students in occupational safety within the workshop
7. ,The interactive lecture involves discussion with students presentation of real-life examples of malfunctions, and .display of images and videos	• malfunctions Electronic Types • components device medical • Preventive and therapeutic maintenance methods
8. Practical training within the laboratory	• testing device Medical • of the and parts within electronic circuits faults Tracing device • Disassembling and assembling components • Training students in actual maintenance
9. Cooperative education	:Dividing students into groups in order to • inspection Device • Carrying out maintenance work • fault reports Preparing
10. Educational resources	• devices medical training • devices Electronic measuring • Projector • tools Maintenance, dismantling and installation
11. methods Assessment	• Short tests • Duties and Reports

- questions Oral
- Maintenance implementation evaluation
- inspection and diagnosis Fault
- repair after the devices Operating
- evaluation within the laboratory Performance

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
,Reports written exams, and daily exams	Practical lectures	Horizontal deviation stage faults and frequency regulation– High voltage faults– Stage faults deviation vertical and organization Its frequency.	Knowledge and Application	hours ٢	the first
,Reports written exams, and daily exams	Practical lectures	repair Malfunctions phase Sound- MalfunctionsFM detector– Malfunctions amplifier ability For hesitation auditory	Knowledge and Application	hours ٢	the second

,Reports written exams, and daily exams	Practical lectures	- audio stage faults FM - detector faults audio frequency power amplifier faults	Knowledge and Application	hours ۲	the third
,Reports written exams, and daily exams	Practical lectures	Training on repairing common faults in a black and white television	Knowledge and Application	hours ۲	Fourth
,Reports written exams, and daily exams	Practical lectures	Students were tested with general exercises on repairing a black and .white television	Knowledge and Application	hours ۲	Fifth
,Reports written , exams and daily exams	Practical lectures	a color TV map- Locate components - Identify the differences between color TVs And normal	Knowledge and Application	hours ۲	Sixth
,Reports written , exams and daily exams	Practical lectures	Horizontal deviation stage faults and frequency regulation– High voltage faults– Stage faults Vertical deflection and regulation of its frequency.	Knowledge and Application	hours ۲	Seventh
,Reports written , exams and daily exams	Practical lectures	TV control and monitoring training Color- Adjust and organize colors	Knowledge and Application	hours ۲	Eighth
,Reports written , exams and daily exams	Practical lectures	Power supply stage faults for color television- faults touch control circuits	Knowledge and Application	hours ۲	Ninth

,Reports written , exams and daily exams	Practical lectures	Repairing faults in the channel selector– -inter frequency– detector– and automatic gain controller for a .color television	Knowledge and Application	hours ۲	tenth
,Reports written , exams and daily exams	Practical lectures	RGB color amplification stage and color display LED faults- Checking the third display's power .supply	Knowledge and Application	hours ۲	eleventh
,Reports written , exams and daily exams	Practical lectures	Implementing the necessary adjustments for all stages of the device after the repair is completed	Knowledge and Application	hours ۲	twelfth
,Reports written , exams and daily exams	Practical lectures	Testing students with common fault repair exercises for a color television	Knowledge and Application	hours ۲	thirteenth
,Reports written , exams and daily exams	Practical lectures	VCD player operation and control training- Organization via remote control and storage on a modern television	Knowledge and Application	hours ۲	fourteenth
,Reports written , exams and daily exams	Practical lectures	exercises on to examine and measurement stages Preparation For devices VCD – Delusional Malfunctions The rumor In it.	Knowledge and Application	hours ۲	fifteenth

١١- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
• equipment Medical maintenance books • Practical Electronics Books	Main references (sources)
• Operation and maintenance manuals for equipment medical • manufacturers device) such as Philips, GE Healthcare (	Recommended books and references (scientific journals and (...reports
Department website	Electronic references and websites

١- Course Name
project
٢- Course code
MDDI205
٣- Semester/Year
Second / ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٩/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٣٠) hours per week ٢
٧- Name of the course coordinator
Name: A group of faculty members from the department :e-mail
٨- Course Objectives
The student learns how to work in a team and solve problems .using the scientific method
٩- Teaching and learning strategy

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Theoretical lectures	Theoretical lectures	Choosing a project topic name	Knowledge and Application	٢ hours	the first
Theoretical lectures	Theoretical lectures	Distributing projects to students, meeting with the supervising professor , and starting to review the library to obtain the resources related to the assigned project for the students .	Knowledge and Application	٢ hours	Second and third
Theoretical lectures	Theoretical lectures	Gathering information ,about the project starting the theoretical study and preparation The designs required to implement the project.	Knowledge and Application	٢ hours	Fourth
Theoretical lectures	Theoretical lectures	Start implementing the planned designs practically and conducting .experiments	Knowledge and Application	٢ hours	The fifth
Theoretical lectures	Theoretical lectures	Discussing the practical results and their compatibility with real-world outcomes And finding the necessary transcendence for apparent cases	Knowledge and Application	٢ hours	The sixth

Theoretical lectures	Theoretical lectures	Arranging the written sections of the report for each of the previous stages To write the final project report in the following format Project name: Project Professor: Student names: Summary: Chapter : One Introduction :Chapter Two Theoretical Part :Chapter Three Practical Part and Results Chapter Four: ,Discussion of Results Conclusions , and .Proposals Sources	Knowledge and Application	۲ hours	Seventh
Theoretical lectures	Theoretical lectures	The project's working model will be submitted along with the final report for final testing and evaluation.	Knowledge and Application	۲ hours	The eighth
Theoretical lectures	Theoretical lectures	Project progress monitoring	Knowledge and Application	۲ hours	The ninth
Theoretical lectures	Theoretical lectures	Conducting seminars to discuss developments and	Knowledge and Application	۲ hours	The tenth and eleventh

		present them to faculty members			
Theoretical lectures	Theoretical lectures	Project progress report and completion percentage	Knowledge and Application	۲ hours	twelfth
Theoretical lectures	Theoretical lectures	Project testing and evaluation	Knowledge and Application	۲ hours	thirteenth
Theoretical lectures	Theoretical lectures	Addressing existing problems	Knowledge and Application	۲ hours	fourteenth
Theoretical lectures	Theoretical lectures	Submit the project and deliver it to the supervisor along with the project's theoretical .report	Knowledge and Application	۲ hours	fifteenth

۱۱- Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

۱۲- Learning and teaching resources	
Available in the department library	Required textbooks (curriculum (books, if available
Available in the institute's library	Main references (sources)
	Recommended books and references (scientific journals and (...reports
Department website	Electronic references and websites

١- Course Name
Programmable Logic Controller
٢- Course code
MDDI213
٣- Semester/Year
Second ٢٠٢٥ - ٢٠٢٦
٤- Date the description was prepared
٢٠٢٥/٥/١٥
٥- Available forms of attendance
mandatory
٦- Number of credit hours (total) / Number of units (total)
(hours ٤٥) hours per week ٣
٧- Name of the course coordinator
Name: Ghaith Thaer Fadel :e-mail Ghaith.tf@ntu.edu.iq
٨- Course Objectives
the student to the components of a software Introducing -١ controller and how to program it programmable digital controllers Identifying -٢ the ability to The program's specific skills objectives include -٣ manage work, the ability to solve problems in the workplace, and .the necessary skills in this field
٩- Teaching and learning strategy
- Course objectives - Understanding the concept of PLCand its importance in industrial automation - Understanding the components of a programmable logic controller (PLC) and how it works - LearnPLC programming using ladder logic - Design and operation of logic circuits and industrial control - Handling sensors, timers, counters, and signals - Developing practical application skills and industrial problem-solving abilities - The interactive lecture is conducted through - Ask direct questions - Involving students in the discussion

- Show real industrial examples
- 3. Practical and applied learning is the most important strategy in PLC instruction.
 - Connecting sensors and switches
 - Writing programs in the Ladder language
 - Implementing on/off circuits
- 4. Educational resources
 - computer
 - PLC device
 - Data show projector
 - Sensors and electrical switches
 - Practical training boards
- 5. methods Assessment
 - Short tests
 - questions Oral
 - Homework

١٠- Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Daily tests	Theoretical lectures	the introduction	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	the first
Daily tests	Theoretical lectures	Sensors with a programmable) controller ,temperature ,Pressure (.movement, etc	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	Second and third
Daily tests	Theoretical lectures	, switch electrical connection	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	Fourth

Daily tests	Theoretical lectures	Introduction to the Language of Peace	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Fifth
Daily tests	Theoretical lectures	Logic circuit(AND ,OR ,NOT .etc ,) using ladder logic	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Sixth
Daily tests	Theoretical lectures	Timers and their types - simulation using ladder logic	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Seventh
Daily tests	Theoretical lectures	Sign language	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	The eighth
Daily tests	Theoretical lectures	Digital counter in the language of the scale with examples.	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	The ninth
Daily tests	Theoretical lectures	Example of a conversion) circuit) using ladder logic	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	The tenth
Daily tests	Theoretical lectures	Example of a traffic sign	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	Eleventh
Daily tests	Theoretical lectures	A practical example of opening and closing a door using a motion sensor.	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	The twelfth
Daily tests	Theoretical lectures	Single-phase motor starter circuit using a switch (motor	Knowledge and Application	hours ۲ (theory) hour ۱ (practical)	thirteenth

		starter) using ladder logic.			
Daily tests	Theoretical lectures	Three-phase motor control circuit (Delta Star)	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	The fourteenth
Daily tests	Theoretical lectures	A practical example of an electric elevator	Knowledge and Application	hours ٢ (theory) hour ١ (practical)	The fifteenth

١١- Course Evaluation

Student reports and activities, oral and written theoretical and practical exams

١٢- Learning and teaching resources

Available in the department library	Required textbooks (curriculum (books, if available
- PLC Diagram Book - Industrial Automation book	Main references (sources)
Industrial Control and Automation References	Recommended books and references (scientific journals and (...reports
Official website of the department	Electronic references and websites