North Technical University

First Cycle – Bachelor's Degree (B.Sc.) - Medical Instrumentation Technical Engineering

بكالوريوس - تقنيات الهندسة الكهربائية



MODULE DESCRIPTION Form

University Name: Northern Technical University.....

Faculty/Institute: Technical Engineering College Mosul.....

Scientific Department: Electrical Engineering Technology

Academic or Professional Program Name: Bachelor of Electrical Engineering Technology

Final Certificate Name: Bachelor of Electrical Engineering Technology

Academic System: Bologna Process.....

Description Preparation Date: 2/9/2025

File Completion Date: 2/9/2025

Signature:

Head of Department Name:
Prof Dr. Mohammed Yahya Salim

الجامعة التقنية الشمالية
الكلية التقنية الهندسية / الموصل
قسم تقنيات الهندسة الكهربائية

Date: 2/9/2025

Signature:

Scientific Associate Name:

Prof. Dr. Mohammed Sabah Jarjees

Date: 25/9/2025

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance

Department: Assist. Lect. Warqaa Hashim Mahmood

Date:

Signature:

الجامعة التقنية الشمالية
الكلية التقنية الهندسية
الموصل

A. J.

Approval of the Dean

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1. Overview

This catalogue is about the courses (modules) given by the program of Electrical Engineering Technique to gain the Bachelor of Science degree. The program delivers (47) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج تقنيات الهندسة الكهربائية للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (48)مادة دراسية، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2025-2026

Level 1 Module 1

Code	Course/Module Title	ECTS	Semester
EET100	DC ELECTRICAL CIRCUITS	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	57
Description			
To teach the students the various calculation in electrical circuits & Learn about different theories			

Level 1 Module 2

Code	Course/Module Title	ECTS	Semester
EET101	Digital technology	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**

4	2	93	57
Description			
Training students on the basics of logical circuits used in electronic computers and how they work and Building logical circuits and learning about computer operation.			

Level 1 Module 3

Code	Course/Module Title	ECTS	Semester
EET102	**ENGINEERING DRAWING**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	4	63	62
Description			
To explore further and confirm the reference of engineering drawing to the varied design applications found in engineering and technology in general. To further the ability to communicate information by engineering drawings. To develop knowledge to two dimensional (2D) computer-aided droughting (CAD).			

Level 1 Module 4

Code	Course/Module Title	ECTS	Semester
EET103	**MATHEMATICS**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
6	0	93	32
Description			
To teach the students: 1-Derivatives of trigonometric functions 2- Partial differentiation and Total differential 3- limit and derivative concepts 4- The Fundamental Theorem of Calculus, 5-Indefinite Integrals and the Net Change Theorem			

Level 1 Module 5

Code	Course/Module Title	ECTS	Semester
EET104	**ENGINEERING WORKSHOPS**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**

0	3	48	77
Description			
Providing the student with manual experience and scientific proficiency.			

Level 1 Module 6

Code	Course/Module Title	ECTS	Semester
EET105	ARABIC LANGUAGE	3	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	48	27
Description			
تعليم بأساسيات اللغة العربية، على انه علم يبحث تعليم المهارات اللغوية وتطبيقها فى المخاطبات اليومية والرسمية .التعامل على اساس الاقتباس ثم التعلم بهدف تطوير القابلية الذهنية للطالب.تنمية قدرة الطالب على اتقان اللغة وتحليل ظواهر الكلام.تشجيع البحث العلمي وتحسين المهارات النقاشية لدى الطالب.تنمية وتطوير المهارات الابداعية والتفكيرية والقدرة على التحليل والفهم والاستنباط في المجالات اللغوية والأدبية			

Level 1 Module 7

Code	Course/Module Title	ECTS	Semester
EET106	Engineering Mechanics	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	0	48	127
Description			
Giving the student the theoretical information that has the main role in solving technical problems in addition to the basic and prominent role inbuilding machines and devices. As well as introducing the student to stresses and how to test materials and minerals.			

Level 1 Module 8

Code	Course/Module Title	ECTS	Semester
EET107	Human Rights AND DEMOCRACY	4	2

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	67
Description			
التعرف على الحقوق المكتسبة لكلّ إنسانٍ على وجه الأرض بلا تحيُّزٍ أو تمييز، وبغض النظر عن عرقه، أو جنسيته، أو جنسه، أو لغته، أو دينه، وبذلك يحِقُّ لكلّ فردٍ في العالم بأن يتمتَّع بالحقوق الخاصة به دون أي مساسٍ بها بما يضمن له العيش بكرامةٍ ومساواة			

Level 1 Module 9

Code	Course/Module Title	ECTS	Semester
EET108	ENGLISH LANGUAGE (BEGINNER)	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42
Description			
The student will acquire English listening skills as well as how to use extremely common everyday idioms and short sentences for immediate needs.			

Level 1 Module 10

Code	Course/Module Title	ECTS	Semester
EET109	AC ELECTRICAL CIRCUITS	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	57
Description			
To teach the students to the behavior of electrical circuits(containing basic components such as resistance, coil and capacitor) in the steady state			

Level 1 Module 11

Code	Course/Module Title	ECTS	Semester
EET110	PHYSICS	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			

Preparing the student to study electrical and electronic physics and the properties of electrical materials and semi-conductors.

Level 1 Module 12

Code	Course/Module Title	ECTS	Semester
EET 111	**Computer principls**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the principal work of computer components and how does it work, also they will learn how to user Microsoft Office program packages			

Level 2 Module 13

Code	Course/Module Title	ECTS	Semester
EET 200	**DC GENERATORS**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
Students will learn the general principles of magnetism and types of winding, as well as the different types of DC motors, ways to control them, and their uses.			

Level 2 Module 14

Code	Course/Module Title	ECTS	Semester
EET201	**Electronic Essentials**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
Students will learn the basic components of essential electronic, studying the semiconductors material ,pn junction and applications of diode like as clipping circuits, clamper circuits, and rectifier circuits, also special purposes diodes as well as studying the BJT trasistors.			

Level 2 Module 15

Code	Course/Module Title	ECTS	Semester
EET202	Electrical Circuits Analysis	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the principle of transient AC and DC circuit and design the circuits which used to power electronics, motors, and delay circuits applications.			

Level 2 Module 16

Code	Course/Module Title	ECTS	Semester
EET203	**Sensors**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the work principle of several sensors and recognize the key issues in selecting the right instrument, and to be knowing with several types of actuators, and to understand modern signal transmission techniques and relevant standards, also to become aware of the sampling theorem, ADC and DAC.			

Level 2 Module 17

Code	Course/Module Title	ECTS	Semester
EET 204	**Applied Mathematics**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	0	63	62
Description			
Students will learn the principle of mathematics, lows , solve the equations and the electrical circuit.			

Level 2 Module 18

Code	Course/Module Title	ECTS	Semester
EET205	**Computer Applications**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the principle use of computer program, solve the function and equation using command of MATLAB program			

Level 2 Module 19

Code	Course/Module Title	ECTS	Semester
EET206	**DC Motors**	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72
Description			
Students will learn the general principles of magnetism and types of winding, as well as the different types of DC motors, ways to control them, and their uses.			

Level 2 Module 20

Code	Course/Module Title	ECTS	Semester
EET207	**Electronic Circuits**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the dc biasing of BJT and FET transistor, connections, and how BJT use as operation amplifer with common emitter ,common base and common collector each separately, also the students will study the thyristor and other semiconductor devices (Diac, Triac , SCR)			

Level 2 Module 21

Code	Course/Module Title	ECTS	Semester

EET208	Advanced Electrical circuit Analysis	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
Students will learn the principle of transient AC circuit, Write circuit equations for coupled system and Analyze circuits containing ideal transformers			

Level 2 Module 22

Code	Course/Module Title	ECTS	Semester
EET209	**Instruments and Measurments**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
Students will learn the basic components of measurement devices, studying errors in reading and how to reduce them, as well as an introduction method of using devices in measurements, how to choose the appropriate device, and learning about calibration of devices.			

Level 2 Module 23

Code	Course/Module Title	ECTS	Semester
EET210	**Engineering Analysis**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	0	63	62
Description			
To help students to understand the engineering analysis transformations in complex frequencies domains, in order to solve complicated mathematical and electrical circuits.			

Level 2 Module 24

Code	Course/Module Title	ECTS	Semester

EET211	English Language (Intermediate)	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42
Description			
The student will acquire English tensed, grammers as well as how to use the vocabulary for forming the sentences, solving the problems and short conversation.			

Level 3 Module 25

Code	Course/Module Title	ECTS	Semester
EET300	**Principles OF Power Engineering**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
To teach the students the various calculation in electrical circuits & Learn about different theories.			

Level 3 Module 26

Code	Course/Module Title	ECTS	Semester
EET301	**DC Power Conversions**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			

Students will learn the principle of DC Power converters and principles of designing DC power circuits based on power electronics devices for different industrial power applications

Level 3 Module 27

Code	Course/Module Title	ECTS	Semester
EET302	**Electrical Transformers And Induction Machines**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
The student will be able to: **1 .Understand AC machines of different types.** **2 .Learn how to use alternating current machines.** **3. Learn the methods of checking and selecting these machines.**			

Level 3 Module 28

Code	Course/Module Title	ECTS	Semester
EET303	**Electromagnetic Fields**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	32
Description			
Learn how to deal with vectors and coordinate types, as well as how to convert between them. **The study also attempts to learn about electric fields and their effects on electric charges and bodies.** **Magnetic Field Effects It is also feasible to discover how the electric and magnetic fields are related by studying Maxwell's equation.**			

Level 3 Module 29

Code	Course/Module Title	ECTS	Semester

EET 304	Microprocessor	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
To teach students about architecture, programming, hardware, and application of microprocessors.			

Level 3 Module 30

Code	Course/Module Title	ECTS	Semester
EET 305	**Numerical Analysis**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	0	63	62
Description			
This course is designed to achieve the following objectives: - The objectives of studying this module are to make the students familiarize with the ways of solving complicated mathematical problems numerically. Describing and understanding of the several errors and approximation in numerical methods.			

Level 3 Module 31

Code	Course/Module Title	ECTS	Semester
EET 306	**Advanced Power engineering**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the principle of transient AC and DC circuit and design the circuits which used to power electronics, motors, and delay circuits applications			

Level 3 Module 32

Code	Course/Module Title	ECTS	Semester
EET 307	**AC Power conversions**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Students will learn the principle of AC Power converters and principles of designing AC power circuits based on power electronics devices for different industrial power applications			

Level 3 Module 33

Code	Course/Module Title	ECTS	Semester
EET 308	**Synchronous and Special Machines**	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	57
Description			
The student will be able to: **1 .Understand AC machines of different types.** **2 .Learn how to use alternating current machines.** **3. Learn the methods of checking and selecting these machines.**			

Level 3 Module 34

Code	Course/Module Title	ECTS	Semester
EET 309	**Digital controllers**	6	2

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72
Description			
1. To help the students understand the basic principles of Microcontroller based design and development 2. To help the students design and build functional prototypes for real-world applications 3. To encourage the students to better understand the state-of-the-art interfacing technologies, their potential applications, and their market views. 4. To help the students undertake problem identification, formulation, and selection of an appropriate Microcontroller			

Level 3 Module 35

Code	Course/Module Title	ECTS	Semester
EET 310	**English language(advanced)**	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42
Description			
The student will acquire English tensed, grammers as well as how to use the vocabulary for forming the sentences, solving the problems and short conversation.			

Level 3 Module 36

Code	Course/Module Title	ECTS	Semester
EET 311	**Elective 1**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
The curriculum aims to introduce the student to the concept of analog communication, its types, methods of downloading signals, and the processes that take place on them, designing and analyzing them.			

Level 4 Module 37

Code	Course/Module Title	ECTS	Semester
EET 400	Transmission and Distribution Systems	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	32
Description			
Students will learn about types of transmission lines, distribution systems, the student is also taught methods of grounding and types of secondary stations			

Level 4 Module 38

Code	Course/Module Title	ECTS	Semester
EET 401	Electric Machine Drives	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	32
Description			
Students will learn the principle of AC and DC Drives and design of power electronics circuits used to drive DC and AC motors, and their applications.			

Level 4 Module 39

Code	Course/Module Title	ECTS	Semester
EET 402	Power System Analysis	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2	93	32
Description			

Course Description: This course provides a comprehensive study of power system analysis techniques used in the planning, design, and operation of electrical power systems. Students will learn about the steady-state and dynamic behavior of power systems, including power flow analysis, and fault analysis. The course aims to equip students with the knowledge and skills necessary to analyze and solve complex power system problems.

Level 4 Module 40

Code	Course/Module Title	ECTS	Semester
EET403	**Electric Power Generation stations**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
The student will be familiar with the methods of generating electrical energy by the variance electrical stations. Each type of these station has a special method for generating electrical energy.			

Level 4 Module 41

Code	Course/Module Title	ECTS	Semester
EET404	**Control System Analysis**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
Students will learn thetheory and practice of control system engineering with emphasis on the analysis and design of feedback system. Control systems are found in wide of applications form aircrafts to robots and process control system. Students will be able to model , design and analyze electrical systems in frequency and time domain.			

Level 4 Module 42

Code	Course/Module Title	ECTS	Semester
EET405	**Project 1**	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	6	93	32
Description			
The objectives of the Course to include applying knowledge and skills to real-world problems, integrating concepts from different areas of electrical engineering, conducting research and investigation, developing problem-solving and design and implementation of electrical devices in the available capabilities. fostering collaboration and teamwork, enhancing project management abilities, improving communication and presentation skills, addressing ethical considerations, and promoting reflection and continuous improvement as future engineers			

Level 4 Module 43

Code	Course/Module Title	ECTS	Semester
EET406	**Professional Ethics**	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	42
Description			
The student will be able and familiar with matters related to the ethics of the engineering profession of which he will be a member, which requires the condition of his knowledge of basic and essential matters to manage or deal with the community and those around him properly and correctly			

Level 4 Module 44

Code	Course/Module Title	ECTS	Semester
ETT407	**Power system protection**	6	2

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	87
Students will learn the importance of protecting the electrical power system, the basic principles of protection, identifying the types of relays and how we protect of each part of the power system.			

Level 4 Module 45

Code	Course/Module Title	ECTS	Semester
EET408	**Stability of power System**	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	87
Description			
This course provides an in-depth study of power system stability, which is essential for understanding the dynamic behaviour of power systems. The course covers various aspects of power system stability, including transient, small-signal, and voltage stability. Students will gain knowledge of stability analysis techniques, control methods, and mitigation strategies to ensure the secure and reliable operation of power systems.			

Level 4 Module 46

Code	Course/Module Title	ECTS	Semester
EET409	**High Voltage Techniques**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			
Students learn about high voltage techniques and the types of insulating materials used in high voltage, also learn the methods of generation, high voltage measuring, testing, cables types which used in high voltage, the effect of over voltages and lightning			

Level 4 Module 47

Code	Course/Module Title	ECTS	Semester
EET410	Project 2	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	6	93	32
Description			
The objectives of the Course to include applying knowledge and skills to real-world problems, integrating concepts from different areas of electrical engineering, conducting research and investigation, developing problem-solving and design and implementation of electrical devices in the available capabilities. fostering collaboration and teamwork, enhancing project management abilities, improving communication and presentation skills, addressing ethical considerations, and promoting reflection and continuous improvement as future engineers.			

Level 4 Module 48

Code	Course/Module Title	ECTS	Semester
EET411	Elective	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			

Contact

Program Manager:

Laith AKRAM | Ph.D. in electrical engineering | Assistant Prof.

Email:

Mobile no.:

Program Coordinator:

1-Alya Hamid | Master in electrical engineering | Assistant Prof.

Email:

Mobile no.:

2-Sanabel Munson | Master in electrical engineering | Assistant Prof.

Email:

Mobile no.: