

Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Apparatus
Department of Quality Assurance and Program
Accreditation
Accreditation Department



Handbook for Academic Program and Course Specifications

2025



Academic Program Description Form

University Name: Northern Technical University

College / Institute: Polytechnic College / Mosul

Scientific Department: Autotronics Engineering Technology Department

Academic or Professional Program Name: Technical Diploma in Autotronics / Bachelor of Autotronics Engineering Technology

Final Degree Name: Technical Diploma in Autotronics / Bachelor of Autotronics Engineering Technology

Academic System: Bologna Process

Description Preparation Date: 1 / 9 / 2025

File Completion Date: 1 / 9 / 2025

Signature:

Head of Department

Name: Mothana M. Mohamed Salih

Date: 2/9/2025

Signature:

Scientific Associate Dean

Name: Hassan M. Qassim

Date: 2/9/2025

Reviewed by:

Quality Assurance and University Performance Division

Name of the Director of the Quality Assurance and University Performance Division : EHSSAN M. ALI

Date: 2/9/2025

Signature:

Dean's Approval

Introduction:

The educational program is a coordinated and structured package of academic courses, comprising procedures and experiences organized as curricular components. Its primary objective is to build and refine the skills of graduates, ensuring they are highly qualified to meet labor market requirements. The program undergoes annual review and evaluation through internal and external auditing procedures and programs, such as the External Examiner Program

The Academic Program Description provides a concise summary of the program's main features and its courses, highlighting the skills intended for students to acquire based on the academic program's objectives. The significance of this description lies in its role as the cornerstone for obtaining program accreditation. It is co-authored by the teaching faculty under the supervision of scientific committees within the academic departments.

This first edition of the guide includes the academic program description in light of the latest updates and developments in the Iraqi educational system. It incorporates the standardized academic program description circulated via the Department of Studies' letter No. TM3/2906 on May 3, 2023, specifically for programs that adopt the Bologna Process as their operational basis.

Concepts and Terminology:

Academic Program Description:

The academic program description provides a concise summary of the department's vision, mission, and objectives, including an accurate description of the intended learning outcomes in accordance with specific learning strategies.

Course Description:

The course description provides a concise summary of the key characteristics of the course and the expected learning outcomes that students are anticipated to achieve, demonstrating whether they have made the maximum benefit from the available learning opportunities. It is derived from the program description.

Program Vision:

An ambitious representation of the future of the academic program, aiming to be advanced, inspiring, motivating, realistic, and applicable.

Program Mission:

The program mission briefly clarifies the objectives and the activities required to achieve them, while also defining the pathways and directions for the program's development.

Program Objectives:

Statements describing what the academic program intends to achieve within a specified period of time, which should be measurable and observable.

Curriculum Structure:

All courses/modules included in the academic program according to the adopted learning system (Bologna Process), whether they are university, college, departmental, or ministry requirements, along with the number of credit units.

Learning Outcomes:

A coherent set of knowledge, skills, and values acquired by the student upon successfully completing the academic program. Learning outcomes for each course must be identified in a manner that fulfills the program objectives.

Teaching and Learning Strategies:

A description of the strategies used by faculty members to enhance student teaching and learning. These are structured plans followed to achieve learning objectives and include all classroom and extracurricular activities intended to accomplish the program learning outcomes.

1. Program Vision

The Department of Autotronics Engineering Technologies aspires to be a leading institution in preparing specialized technical and engineering cadres in modern automotive technologies of all types, equipped with advanced scientific and technical skills and capable of keeping pace with global developments in fault diagnosis and maintenance of advanced automotive systems, in support of national industry and the needs of the local and regional labor market.

2. Program Mission

The mission of the Department of Autotronics Engineering Technologies is to provide specialized education and training that integrates theoretical knowledge with practical skills in the fields of automotive electrical systems, mechanics, and electronics.

The department seeks to develop students' competencies through the use of the latest equipment and modern technologies, preparing them to become qualified technical professionals capable of supporting the labor market or pursuing postgraduate studies, in line with the rapid advancements in the automotive industry.

3. Program Objectives**1. Preparing Advanced Technical Cadres:**

Graduating students equipped with high-level practical and theoretical skills in the maintenance and fault diagnosis of modern, electric, and hybrid vehicles.

2. Implementing Modern Education:

Adopting advanced educational curricula that integrate theoretical knowledge with practical application in laboratories equipped with the latest devices and equipment.

3. Promoting Research and Development:

Encouraging students and faculty members to engage in scientific research and development in the fields of modern automotive systems and embedded technologies.

4. Linking Education with the Labor Market:

Establishing partnerships with industrial and commercial institutions to provide training and employment opportunities for graduates, ensuring that their skills align with labor market requirements.

5. Enhancing Technical Thinking and Innovation:

Developing students' critical thinking and technical problem-solving skills to prepare them for addressing contemporary engineering challenges.

6. Improving Professional Competence:

Providing continuous training programs for students, graduates, and academic staff to keep pace with global developments in Autotronics Engineering and the rapid advancement of the modern automotive industry .

4. Program Accreditation

The program has not yet applied for accreditation, as the department was newly established in the current academic year (2025–2026) and has not yet produced any graduates.

5. Other External Influences

1. Adopted standards and their updates (programmatic and academic accreditation).
2. International and local partnerships.
3. Labor market requirements.
4. Academic competition among various educational institutions.
5. Scientific and technological advancements.
6. Scientific and field visits.
7. Summer training programs.
8. Training courses and workshops.

6. Program Structure				
Program Structure	Number of Courses	Credit Unit	Percentage	Notes
Institution Requirements (University)	10	22	8.5%	8 Supporting Course 2 Elective Course
College Requirements	1	6	2.5%	1 Core Course
Department Requirements	45	212	89%	43 Major Course
Summer Training	Fulfillment of Requirements	----	----	----
Other	None	----	----	----

- **Notes may include whether the course is core or elective.**

7.Program Description

Level	Semester	No.	Module Code	Module Name In English	اسم المادة الدراسية	Language	SSVL (hr/w)					Exam hr/sem	SSVL hr/sem	US SVL hr/sem	SVL hr/sem	ECTS	Module Type	
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)							Sem n (hr/w)
UG1	One	1	NTU100	Democracy and human rights	الديمقراطية وحقوق الانسان	Arabic	2						3	33	17	50	2.00	S
		2	NTU101	English Language	اللغة الانكليزية	English	2						3	33	17	50	2.00	S
		3	ATD100	Mathematics	رياضيات	English	2					2	3	63	37	100	4.00	B
		4	ATD101	computer aided engineering drawing	الرسم الهندسي باستخدام الحاسوب	Arabic	1	2	3				4	94	31	125	5.00	B
		5	ATD102	Engine technology	تكنولوجيا المحركات	Arabic	2		4				6	96	54	150	6.00	C
		6	ATD103	automobile workshops	معمل سيارات	Arabic			4				4	64	86	150	6.00	C
		7	ATD104	principles of Automotive Electrical and Electronic Technology	مبادئ تكنولوجيا كهرباء والإلكترونية للسيارات	Arabic	2	2	2			1	8	113	12	125	5.00	C
							Total	11	4	13	0	2	1	31	496	254	750	30.00
UG1	Two	1	NTU103	Arabic Language	اللغة العربية	Arabic	2						3	33	17	50	2.00	S
		2	NTU102	Computer	الحاسوب	Arabic	1		3				3	63	12	75	3.00	S
		3	MPE100	Mechanical workshops	الورش الميكانيكية	English			3				3	48	102	150	6.00	B
		4	ATD105	Hybrid and electrical automobiles	السيارات الكهربائية والهجينة	Arabic	2					2	3	63	37	100	4.00	C
		5	ATD106	Engine systems technology	تكنولوجيا منظومات المحركات	Arabic	2		4			2	8	128	22	150	6.00	C
		6	ATD107	Automobiles electrical and electronics technology applications	تطبيقات تكنولوجيا كهرباء والإلكترونية للسيارات	Arabic	2	2	2			3	93	32	125	5.00	C	
		7	ATD108	Mechanical Engineering	ميكانيكا هندسية	English	2	2			2	4	94	6	100	4.00	C	
							Total	11	4	12	0	2	4	27	522	228	750	30.00

8. Program Intended Learning Outcomes (PILOs)

Knowledge:

1. Knowledge of the general principles of engineering and mechanical drawing, which provide a foundation for understanding design schematics of vehicle components and structures.
2. Knowledge of the fundamentals of electrical and electronic engineering, which provide a basis for understanding complex electrical circuits, sensors, and actuators in modern vehicles.
3. Knowledge of electronic control systems and Engine Control Units (ECU), which provide a foundation for understanding how data is processed and how engine performance and auxiliary systems are controlled.
4. Knowledge of fluid mechanics and hydraulics principles, which provide a basis for understanding the operation of braking systems, power steering, and automatic transmission systems.
5. Knowledge of thermodynamics and heat transfer principles, which provide a foundation for understanding internal combustion engine cycles and vehicle heating, ventilation, and air conditioning (HVAC) systems.
6. Knowledge of fuel chemistry and combustion processes, which provide a basis for understanding emissions analysis, pollution reduction methods, and improving energy efficiency.
7. Knowledge of diagnostic and On-Board Diagnostics (OBD) technologies, which provide a foundation for understanding how to trace software and mechanical faults using advanced diagnostic tools.
8. Knowledge of hybrid and electric vehicle principles, which provide a basis for understanding high-voltage battery technologies and electric propulsion systems as alternatives to conventional systems.

Skills:

1. Developing skills in inspection, installation, and programming of electronic and mechanical vehicle systems, including working with Engine Control Units (ECU), sensors, and actuators.
2. Evaluating engine and auxiliary system performance by measuring performance parameters such as torque, horsepower, and exhaust emission levels using dynamometers and gas analyzers.
3. Diagnosing mechanical, electrical, and software faults in vehicles and performing maintenance procedures using intelligent diagnostic scanners and reading Diagnostic Trouble Codes (DTC), as well as addressing faults in electronic fuel injection systems, Anti-lock Braking Systems (ABS), and airbag systems.
4. Using laboratory, workshop tools, and specialized software efficiently and safely, including oscilloscopes, multimeters, and automotive engineering simulation programs.

9. Core Values :

1. Learning how to interact with others and work in a team spirit, ensuring effective coordination among technical team members in maintenance centers or production lines to achieve the best outcomes.
2. Developing the ability to make appropriate decisions in order to address errors, especially when dealing with critical vehicle systems, to ensure user safety and repair quality.
3. Learning how to manage and implement projects through planning maintenance operations and managing human and technical resources within modern autotronics workshops.
4. Strict adherence to occupational health and safety regulations, with particular focus on the hazards associated with high-voltage systems in electric and hybrid vehicles, and the safe handling of chemical materials.
5. Promoting professional ethics and technical integrity by ensuring honesty in fault diagnosis, maintaining customer data confidentiality, and guaranteeing compliance of spare parts with required engineering standards, thereby strengthening trust between technicians and society.

10. Teaching and Learning Strategies

1. Theoretical and Interactive Learning:

- **Detailed Explanation:** Delivering scientific content clearly while linking engineering theories to intelligent vehicle systems.
- **Dialogue and Discussion:** Encouraging scientific analysis and discussion of course topics, particularly those related to electronic control logic.
- **Brainstorming:** Motivating students to develop innovative solutions to contemporary technical challenges.

2. Applied and Technical Learning:

- **Specialized Problem Solving:** Engaging students in solving mathematical and engineering problems that simulate real faults in Autotronics systems.
- **Problem-Based Learning (Diagnosis):** Presenting actual fault cases and assigning students to develop systematic procedures for diagnosis and maintenance.
- **Computer Simulation:** Utilizing specialized software applications to simulate the operation of circuits and sensors prior to practical field implementation.

3. Practical and Professional Training:

- **Guided Workshops and Laboratories:** Providing intensive hands-on training on intelligent diagnostic equipment and modern measurement instruments with accuracy and professionalism.
- **Team-Based Work:** Dividing students into technical groups within laboratory environments to simulate real workplace conditions in maintenance centers.
- **Technical Presentations:** Assigning students to deliver short presentations on emerging technologies in order to enhance their research and presentation skills.

11. Assessment Methods

1. Academic Assessment (Theoretical Knowledge):
 - Periodic and Final Examinations: Including daily, weekly, monthly, and final examinations to evaluate students' understanding of engineering concepts and scientific theories.
 - Classroom Discussions: Assessing students' participation and engagement during the presentation and discussion of academic material.
2. Professional Assessment (Practical Skills):
 - Direct Practical Examinations: Evaluating students' performance in workshop environments, particularly in fault diagnosis and the use of diagnostic equipment.
 - Technical Reports: Assessing students' ability to prepare accurate diagnostic reports for mechanical and electrical faults.
3. Behavioral Assessment (Values and Ethics):
 - Teamwork Performance Evaluation: Measuring the student's effectiveness and collaboration within group-based laboratory projects.
 - Discipline and Safety Compliance: Assessing the extent of students' commitment to occupational health and safety regulations as well as professional ethics during practical work.

12. Teaching Staff

Faculty Members

Academic Rank	Specialization		Specific Requirements / Skills (if applicable)		اعداد الهيئة التدريسية	
	General Specialization	Specific Specialization			Permanent Staff	Adjunct / Visiting Lecturer
Assistant Professor	Mechanical Engineering	Thermal Engineering			Permanent Staff	
Assistant Professor	Business Administration	Strategic Management			Permanent Staff	
Assistant Professor	Power and Machinery Engineering	Renewable Energy			Permanent Staff	
Assistant Lecturer	Thermal Engineering Technologies	Thermal Engineering Technologies			Permanent Staff	
Assistant Lecturer	Mechanical Engineering	Mechanical Engineering			Permanent Staff	
Assistant Lecturer	Thermal Engineering Technologies	Thermal Engineering Technologies			Permanent Staff	
Assistant Lecturer	Mechanical Engineering Sciences	Thermal Engineering			Permanent Staff	

13. Professional Development

Orientation of New Faculty Members

1. Teamwork Skills
2. Leadership and Responsibility Skills
3. Specialized Training Courses in the Field of Specialization
4. Courses on Teaching and Learning Methodologies
5. Courses on Scientific Research and Publication Methods

Professional Development of Faculty Member

1. Sending Staff on Training Programs Inside and Outside the Country.
2. Conducting Field Research Related to Autotronics Specialization.
3. Employing Modern and Appropriate Teaching Aids to Enhance Students' Knowledge and Support Their Competence in Various Professional Fields.

Admission Criteria

1. The centralized admission requirements adopted by the Ministry of Higher Education and Scientific Research.
2. Admission is open to both genders.
3. Graduates of the Scientific Branch of the preparatory (secondary) school.
4. Graduates of Vocational Education in the following specializations:
(Automotive Mechatronics, Automotive, Industrial/Engines, Industrial/Agricultural Mechanization, Industrial/Mechanical, Industrial/Mechatronics – Industrial Technology, Industrial/Air Conditioning and Refrigeration, Industrial/Electronics and Control, Industrial/Power, Industrial/Electrical, Industrial/Computer and Information Technology – Computer Assembly and Maintenance, Industrial/Plumbing Technology, Industrial/Elevator Maintenance, Industrial/Water Treatment and Networks, Industrial/Ceramics and Glass, Industrial/Tools, Industrial/Machine Assembly).

Main Sources of Information for the Program :

The program relies on a range of authoritative and up-to-date academic and technical sources to ensure comprehensive coverage of theoretical and applied knowledge, including:

- **Approved textbooks and official curricula** adopted by the Ministry of Higher Education and Scientific Research, covering the fundamental principles of electrical engineering, electronics, automotive systems, and control technologies.
- **Peer-reviewed scientific journals and scholarly publications**, including internationally recognized databases such as IEEE Xplore, SAE International publications, and engineering journals published by Elsevier.
- **Academic databases and digital libraries**, such as ScienceDirect, SpringerLink, and Google Scholar, which provide access to a wide range of current research and technical studies in engineering and applied sciences.
- **Specialized and contemporary reference books in automotive and engineering fields, including topics such as automotive electronics, vehicle control systems, engine management systems, and automotive sensors and actuators such as :**

1. John Heywood - Internal Combustion Engine Fundamentals (2018, McGraw-Hill Educate .
2. [Energy, Environment, and Sustainability] Avinashi Kumar Agarwal Dhananjay Kumar .
3. Lino Guzzella, Christopher H. Onder (auth.) - Introduction to Modeling and Control .
4. Gordon P. Blair - Design and Simulation of Four-Stroke Engines (1999, SAE Intern .
5. Ebrahimi, Kambiz M._ Ehsani, Mehrdad_ Gao, Yimin_ Longo, Stefano - Modern electric .
6. Iqbal Husain - Electric and Hybrid Vehicles_ Design Fundamentals (2021, CRC Pres) .
7. automotive mechanics -- William H_ Crouse -- 4th ed_, 1960 -- McGraw-Hill Book C .
8. Engine builder's handbook _ inspection, machining, -- Monroe, Tom, 1940- -- 1st .
9. John R. Walker_ Bob Dixon - Machining Fundamentals (2018, Goodheart-Willcox) - l

Program Development Plan

1. **Curriculum Development:** Updating the curriculum contents to incorporate emerging technologies such as Electric Vehicles (EVs), intelligent driving systems, and digital fault diagnosis protocols.
2. **Updating Educational Content:** Adopting up-to-date international references and resources, and transforming lectures into interactive learning content that integrates both theoretical and practical aspects.
3. **Digital Education:** Implementing engineering simulation software such as MATLAB and Proteus, as well as utilizing virtual reality technologies to explain complex mechanical and electrical components.
4. **Laboratory Modernization:** Equipping laboratories with advanced electronic diagnostic devices (Scanners) and educational platforms for simulating Electronic Control Units (ECUs) and sensors.
5. **Field Training:** Strengthening partnerships with modern automotive maintenance centers to provide students with practical field training, while upgrading the

Program Learning Outcomes (PLOs)												
Year / Level	Course Code / OR Module	Course Name / Module Title	Core / Elective	Knowledge			Skills			Core Values		
				1a	2a	3a	1b	2b	3b	1c	2c	3c
First Level First Semester 2025–2026	NTU100	Democracy and Human Rights	Core								✓	
	NTU101	English Language	Core	✓			✓	✓		✓		✓
	ATD100	Mathematics	Core	✓	✓	✓	✓	✓				
	ATD101	Computer-Aided Engineering Drawing (CAD)	Core	✓			✓	✓	✓		✓	
	ATD102	Engine Technology	Core	✓	✓	✓						
	ATD103	Automotive Workshop	Core	✓			✓	✓	✓		✓	
	ATD104	Principles of Automotive Electrical and Electronic Technology	Core	✓	✓		✓			✓		
First Level Second Semester 2025–2026	NTU102	Arabic Language	Core	✓			✓	✓		✓		✓
	NTU103	Computer	Core	✓			✓	✓	✓		✓	
	MPE100	Mechanical Workshops	Core	✓			✓	✓	✓			✓
	ATD105	Electric and Hybrid Vehicles	Core	✓	✓		✓			✓		
	ATD106	Engine Systems Technology	Core	✓	✓		✓			✓		
	ATD107	Applications of Automotive Electrical and Electronic Technology	Core	✓	✓		✓			✓		
	ATD108	Engineering Mechanics	Core	✓	✓	✓	✓	✓				

- Please place a check mark in the boxes corresponding to the individual Program Learning Outcomes (PLOs) being assessed.

Course Description/first year/ first semester

Course Description Form/ Mathematics

1. Course Name: Mathematics	
2. Course Code: ATD100	
3. Semester / Year: First semester/ First year/courses	
4. Description Preparation Date: 1/7/2025	
5. Available Attendance Forms: mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 weekly * 15 weeks = 30 hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Sawla Taha Hamed	
Email: sawla99@ntu.edu.iq	
8. Course Objectives	
Course Objectives	1. Learning The student the mathematical basics necessary to understand and analyse quantitative phenomena using the principles of mathematics. 2. Enabling The student to apply these principles in technical and applied fields within his technical specialisation. 3. Developing t of computational and analytical skills on The student. 4. Enabling the student to perform the basic calculations and algebraic operations accurately and quickly.
9. Teaching and Learning Strategies	
Strategy	1- Self-direction strategy. 2- Collaborative learning strategy. 3- Role-playing strategy. 4- Discussion and dialogue strategy. 5- Lecture strategy. 6- Research and discovery strategy. 7- Brainstorming strategy.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student should learn the concept of matrices	Introduction to matrices	Theoretical	Classroom and homework assignments
2	2	The student should learn the Types of matrices, algebraic operations on matrices	Types of matrices, algebraic operations on matrices	Theoretical	Classroom and homework assignments, weekly exams
3	2	The student should learn how to calculate the value of determinants for the matrices	Find the determinants for the matrices	Theoretical	Classroom and homework assignments, weekly and monthly exams
4	2	The student should learn Solving linear equations	Solving linear equations	Theoretical	Classroom and homework assignments, weekly and monthly exams
5	2	The student should learn	The Kramer method, its applications	Theoretical	Classroom and homework assignments, weekly and monthly exams
6	2	The student will learn how to apply the Kramer rule to solve linear equations	Introduction to vectors, algebraic operations on vectors, add and subtraction of vectors, multiplying a constant in the vector, finding the length of the vector	Theoretical	Classroom and homework assignments, weekly and monthly exams
7	2	The student will learn the Algebraic multiplication of vectors, directional multiplication of vectors	Algebraic multiplication of vectors, directional multiplication of vectors	Theoretical	Classroom and homework assignments, weekly and monthly exams

8	2	The student will learn how to Find the angle between two vectors, find the vertical vector on two vectors	Find the angle between two vectors, find the vertical vector on two vectors	Theoretical	Classroom and homework assignments, weekly and monthly exams
9	2	The student should know the types of algebraic functions	Algebraic functions	Theoretical	Classroom and homework assignments, weekly and monthly exams
10	2	To understand the student the Trigonometric functions	Trigonometric functions	Theoretical	Classroom and homework assignments, weekly and monthly exams
11	2	The student will able to draw trigonometric functions	Drawing trigonometric functions	Theoretical	Classroom and homework assignments, weekly and monthly exams
12	2	To understand the student the Exponential functions	Exponential functions	Theoretical	Classroom and homework assignments, weekly and monthly exams
13	2	The student will able to student the Logarithmic functions, natural logarithms	Logarithmic functions, natural logarithms	Theoretical	Classroom and homework assignments, weekly and monthly exams
14	2	The student will able to draw the Exponential and logarithmic functions	Drawing the elecial and logarithmic functions	Theoretical	Classroom and homework assignments, weekly and monthly exams
15	2	To understand the student the difference between apparent function and the implied function	The apparent function, the implied function	Theoretical	Classroom and homework assignments, weekly and monthly exams

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Daily preparation	10
Daily oral exam	10
Classroom activity	10
Monthly and written tests	40
Reporting	20
Practical activity	10

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Thomas Calculus by George B. Thomas, JR. 2 Calculus by Frank Ayers
Recommended books and references (scientific journals, reports...)	1-Panal calter “Technical Mathematics” 2- Murray R. “ Mathematical handbook” 3- Shantinarayam “ Engineering Mathematics part 1 – 1987” 4- Garlick B. “ Technical Mathematics” 1981.
Electronic References, Websites	https://youtube.com/@alihasanali?si=7pfr85WMfs5U9hw1

Course Description/first year/ first semester

Course Description Form / English language

1. Course Name: English language	
2. Course Code: MTU 101	
3. Semester / Year: 1 st semester/first year/courses	
4. Description Preparation Date: 1 / 7 / 2025	
5. nAvailable Attendance Forms: mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
(2 theoretical) weekly * 15 weeks = 30 hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Mothana M.Mohamed Salih	
Email: muthana.m1981@ntu.edu.iq	
8. Course Objectives	
Course Objectives	1-1. Demonstrate understanding of fundamental grammar rules in academic writing contexts. 2. Develop analytical reading skills for interpreting academic English texts effectively. 3. Improve academic writing proficiency by composing clear, coherent, and well-structured text
9. Teaching and Learning Strategies	
Strategy	1- Self-direction strategy. 2- Collaborative learning strategy. 3- Role-playing strategy. 4- Discussion and dialogue strategy. 5- Lecture strategy. 6- Research and discovery strategy. 7- Brainstorming strategy.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Ability to Use Basic Grammar Rules	Hello	theoretical	Classroom and homework assignments, weekly and monthly exams
2	2	Correct application of tenses in sentences.	Your world	theoretical	Classroom and homework assignments, weekly and monthly exams
3	2	Understanding and using auxiliary verbs.	All about you	theoretical	Classroom and homework assignments, weekly and monthly exams
4	2	Improving Writing Skills	Family and friends	theoretical	Classroom and homework assignments, weekly and monthly exams
5	2	Writing short paragraphs with coherence and cohesion.	The way I live	theoretical	Classroom and homework assignments, weekly and monthly exams
6	2	Ability to write formal and informal letters.	Every day	theoretical	Classroom and homework assignments, weekly and monthly exams
7	2	Vocabulary Expansion.	My favourites	theoretical	Classroom and homework assignments, weekly and monthly exams
8	2	Learning new words and using them in sentences.	Where I live	theoretical	Classroom and homework assignments, weekly and monthly exams
9	2	Knowing synonyms and antonyms of common word,	Times past	theoretical	Classroom and homework assignments, weekly and monthly exams
10	2	Regular & irregular, questions & negatives	We had a great time	theoretical	Classroom and homework assignments, weekly and monthly exams
11	2	Knowing synonyms and	I can do that	theoretical	Classroom and homework assignments, weekly and monthly exams

		antonyms of common word			
12	2	Speaking and Pronunciation, signs all around	please and thank you	theoretical	Classroom and homework assignments, weekly and monthly exams
13	2	Ability to engage in simple and clear conversations.	Here & now	theoretical	Classroom and homework assignments, weekly and monthly exams
14	2	Improving pronunciation and accurate word stress.	It's time to go	theoretical	Classroom and homework assignments, weekly and monthly exams
15	5	Scientific visit	Colleges of arts and Education/English dept.	Theoretical	Discussion and dialogue

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Daily preparation	10
1st month text	15
2nd month text	15
Final text	60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	not available
Main references (sources)	1– Beginner student's book, New headway plus
Recommended books and references (scientific journals, reports...)	1– Books on English language
Electronic References, Websites	Sites that care about English language

Course Description/first year/ first semester

Course Description Form /Engine technology

1.	Course Name: Engine technology
2.	Course Code: ATD102
3.	Semester / Year: first semester/first year
4.	Description Preparation Date: 1/ 11 / 2025
5.	Available Attendance Forms: mandatory
6.	Number of Credit Hours (Total) / Number of Units (Total)
7.	Course administrator's name (mention all, if more than one name)
Name: Rafal Khalid Jasim Email : mti.lec228.rafal@ntu.edu.iq	
8.	Course Objectives
Course Objectives	1.Understanding Engine Operation: Learn about engine types, components, and basic operating principles. 2.Performance Analysis: Study the factors affecting engine efficiency and evaluate performance. 3.Fault Diagnosis: Master fault diagnosis techniques using modern tools and equipment. 4.Understanding Modern Systems: Explore electronic control and fuel injection systems in engines. 5.Maintenance and Repair: Acquire skills in engine maintenance and repair while adhering to safety standards. 6.Environmental Awareness: Understand the environmental impact of engines and techniques to reduce emissions. 7.Practical Skills Development: Train in disassembling, assembling, and testing engines using diagnostic tools. 8.Keeping Up with Innovations: Stay updated on future engine technologies and enhance innovative thinking.
9.	Teaching and Learning Strategies
Strategy	1- Lecture strategy 2- Research and discovery strategy 3- Project-Based Learning 4- experiential learning through lab work 5- practical exercises

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	To introduction to the engine history, types and how parts work with each others.	Introduction to Engine Technology	theoretical	Classroom and homework assignments, weekly and monthly exams
1	2	Familiarize students with engine components	Introduction to Engine Disassembly	practical	Classroom and homework assignments, weekly and monthly exams
2	2	To learn how engine work using sensors and how ECU use these sensors to work in optimum condition.	Engine Control Systems (ECU & Sensors)	theoretical	Classroom and homework assignments, weekly and monthly exams
2	2	Label and categorize part. Discuss the function of each component.	Hands-on engine disassembly	practical	Classroom and homework assignments, weekly and monthly exams
3	2	To learn the mean parts of fuel system and how to reduce pollutants with the more efficient fuel consumption	Fuel Systems and Fuel Injection	theoretical	Classroom and homework assignments, weekly and monthly exams
3	2	Perform visual inspections for wear and damage. Measure tolerances	Basic Engine Inspection	practical	Classroom and homework assignments, weekly and monthly exams
4	2	To understand the basic of ignition systems in cars and the principles of ignite the air/fuel mixture	Ignition Systems	theoretical	Classroom and homework assignments, weekly and monthly exams
4	2	Inspect and clean fuel injectors. Test fuel pumps and regulators. Reinstall and test the fuel system.	Troubleshoot and repair fuel systems	practical	Classroom and homework assignments, weekly and monthly exams
5	2	To explain the air system (intake air and exhaust) used in engines	Air and Exhaust Systems	theoretical	Classroom and homework assignments,

					weekly and monthly exams
5	2	Replace spark plugs and wires. Adjust ignition timing using a timing light. Inspect and test distributors and coils	service and maintain ignition systems	practical	Classroom and homework assignments, weekly and monthly exams
6	2	To explain the engine performance and efficiency	Engine Performance and Efficiency	theoretical	Classroom and homework assignments, weekly and monthly exams
6	2	Inspect air filters, intake manifolds, and air ducts. Clean and maintain the exhaust system, including catalytic converters	Inspect and improve airflow systems	practical	Classroom and homework assignments, weekly and monthly exams
7	2	To learn the diagnostics tools and how to troubleshooting the faults in cars	Diagnostics and Troubleshooting	theoretical	Classroom and homework assignments, weekly and monthly exams
7	2	Use OBD-II scanners to read and interpret engine codes. Perform live data monitoring (RPM, engine temperature, etc.).	Learn to use diagnostic tools.	practical	Classroom and homework assignments, weekly and monthly exams
8	2	To learn the car modifications for increase engine performance	Engine Modifications	theoretical	Classroom and homework assignments, weekly and monthly exams
8	2	Disassemble and clean carburetors. Adjust fuel-air mixture and idle speeds. Test carburetor performance after adjustments	Service and tune carburetors	practical	Classroom and homework assignments, weekly and monthly exams
9	2	To learn the basics of maintenance vintage engines	Vintage Engine Maintenance & Basics	theoretical	Classroom and homework assignments, weekly and monthly exams
9	2	Perform compression tests on cylinders. Analyze compression	Evaluate engine health with compression tests	practical	Classroom and homework assignments,

		readings to assess engine condition			weekly and monthly exams
10	2	To know the basics of rebuilding the engines	Overhauling and Rebuilding Engines	theoretical	Classroom and homework assignments, weekly and monthly exams
10	2	Set and adjust camshaft timing. Check and adjust valve clearances. Test engine performance after adjustments	Adjust valve timing and settings	practical	Classroom and homework assignments, weekly and monthly exams
11	2	To learn the advance engine tuning	Advanced Engine Tuning and Performance Tuning	theoretical	Classroom and homework assignments, weekly and monthly exams
11	2	Understand the basic components of turbochargers and superchargers.	Install and test forced induction systems	practical	Classroom and homework assignments, weekly and monthly exams
12	2	To learn how emission system work and environmental considerations control work	Emission Control and Environmental Considerations	theoretical	Classroom and homework assignments, weekly and monthly exams
12	2	Adjust air-fuel ratios using a wideband O2 sensor. Tune ignition timing and valve timing	Tune engine for optimal performance	practical	Classroom and homework assignments, weekly and monthly exams
13	2	To learn how fuel system work in vintage systems	Carburetors and Fuel Systems in Vintage Engines	theoretical	Classroom and homework assignments, weekly and monthly exams
13	2	Inspect and maintain emission control components like EGR valves. Test exhaust emissions before and after system modifications	Test and improve engine emissions	practical	Classroom and homework assignments, weekly and monthly exams
14	2	To apply their knowledge and try tuning an engine	Practical Application: Engine Tuning Workshop	theoretical	Classroom and homework assignments, weekly and monthly exams

14	2	Reassemble the engine with all inspected/replaced parts. Torque and install components	Reassemble a disassembled engine	practical	Classroom and homework assignments, weekly and monthly exams
15	2	Apply all skills learned throughout the course. Modify or restore the engine according to project goals	Final Project & Review	Theoretical + practical	Classroom and homework assignments, weekly and monthly exams

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Daily preparation	
Daily oral exam	
Monthly and written tests	
Reporting	
Practical activity	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	not available
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Engine Management: Advanced Tuning" Greg Banish "The Complete Car Care Manual" by Matthew C. Keegan
Electronic References, Websites	Sites that care about automobile electricity.

First Level / Second Semester
Course Description / Computer Aided Engineering Drawing

Course: Computer Aided Engineering Drawing	
Course Code: ATD101	
Semester / Year: First Semester / First Year / Courses	
Date of preparation of this description: 1/9/2025	
Available Forms of Attendance: Mandatory	
Number of Credit Hours (Total)	
(3 practical) per week * 15 weeks = 45 hours	
Course administrator name (list all names, if more than one)	
Name: Lubna Ali Hussein	
Email: lubna.ali15783@ntu.edu.iq	
Course Objectives (General Objectives of the Course)	
Course Objective	1. Introducing the student to the main features of AutoCAD, including: defining engineering drawing commands. 2. Communicating design concepts and their purpose using a unified visual language, including shapes, symbols and their uses, and engineering drawing tools. Types of geometric lines and their uses, exercises, and functions. 3. Drawing geometric shapes using the computer (rectangle, parallelogram, square, circle), exercises, and their functions. Dimensions and how to apply them to drawings. Principles of projection in engineering drawing, and simple shapes (projective drawing and 3D drawing).
Course Outcomes, Teaching and Learning Methods, and Assessment	
Course Outcomes Definition: These are the knowledge, skills, and values that a student is expected to acquire after studying a Computer-Aided Engineering Drawing course. These outcomes include cognitive (theoretical understanding),	

psychomotor (practical application), and affective (attitudes and values) aspects.

Importance: They clarify for the student what they can learn and apply in the field of engineering drawing.

1- They help the faculty organize the content in a purposeful and coherent manner.

2- They serve as a basis for measuring student performance and the extent to which learning objectives are achieved.

3- They ensure the course aligns with the academic program objectives.

How they are determined: Academic Program Objectives

1- Skills required in the job market (such as the ability to draw and design geometric shapes for certain components of cooling systems).

2- National or international academic standards.

3- Input from stakeholders (such as industry experts and faculty members).

Outcomes	Teaching and Learning Methods	Assessment Methods
A. Knowledge A1. Identifying the basic concepts of AutoCAD. A2. Understanding the scientific and technical principles of AutoCAD and the methods of engineering drawing for cooling system components. A3. Communicating design concepts and objectives using a standardized visual language consisting of shapes and symbols.	Theoretical and practical lectures Presentations and interactive lessons Laboratories and practical exercises Individual assignments	• Weekly practical tests • Provision of classroom exercises on geometric shapes • Monthly practical tests • Class participation and continuous assessment of student performance in practical application

B. Skills B1. Using AutoCAD software. B2. Proficiency in basic drawing and editing tools. B3. Understanding the coordinate system, layer management, and adding geometric details such as dimensions and annotations.	Labs and practical exercises – group work Individual projects and assignments E-learning and open resources	• Weekly practical tests • Provision of classroom exercises on geometric shapes • Monthly practical tests • Class participation and continuous assessment of student performance in practical application
C. Values 1. Creating accurate and clear drawings for engineering projects. 2. Completing drawings quickly and with high accuracy. 3. Drawing simple and precise geometric shapes without the need to use traditional tools such as pens and rulers.	Interactive learning and teamwork (to foster teamwork). Classroom discussions on three-dimensional geometric problems. Case studies with an ethical or engineering dimension.	• Classroom activities that demonstrate commitment to or respect for values • Individual interviews or discussions • Assessment of group work
Teaching and Learning Strategies		
Strategy	1- Self-direction strategy. 2- Collaborative learning strategy. 3- Role-playing strategy. 4- Discussion and dialogue strategy. 5- Lecture strategy. 6- Research and discovery strategy. 7- Brainstorming strategy.	

10. Course structure					
Week	Hours	Required Learning Outcomes	Unit / Subject Name	Learning method	Evaluation method
1	3	The student will learn about AutoCAD.	Getting started with the program and general concepts + AutoCAD interface	Theoretical + Practical	Class assignment weekly and monthly tests
2	3	The student will learn about AutoCAD.	Select the drawing unit of measurement type, change the drawing board boundaries	Practical	Class assignment weekly and monthly tests
3	3	The student should understand the status bar and its drawing properties.	The tools used in the status bar and its drawing properties.	Practical	Class assignment weekly and monthly tests
4	3	The student should know the drawing commands and the commands for editing drawings.	Drawing Commands + Editing Commands	Practical	Class assignment weekly and monthly tests
5	3	The student will learn about different types of lines.	Chart of Line Types in Engineering Drawing	Practical	Class assignment weekly and monthly tests
6	3	The student will learn about different types of 2D drawings.	Practical Exercises for 2D Drawings	Practical	Class assignment weekly and monthly tests
7	3	The student will learn to draw geometric processes.	Applications of Drawing to Engineering Processes	Practical	Class assignment weekly and monthly tests
8	3	The student will apply the drawing techniques of geometric processes.	Applications of drawing to geometric processes	Practical	Class assignment weekly and monthly tests
9	3	The student will draw diagram.	Drawing a diagram that includes 2D drawings + geometric processes	Practical	Class assignment weekly and monthly tests
10	3	The student will learn to draw 3D perspective.	Practical exercises for 3D perspective drawings	Practical	Class assignment weekly and monthly tests
11	3	The student will apply 3D perspective drawing.	Practical exercises for 3D perspective drawings	Practical	Class assignment weekly and monthly tests
12	3	The student will learn the explanation of projection theory.	Drawing projections for a simple perspective	Practical	Class assignment weekly and monthly tests
13	3	The student will learn to draw projections from perspective.	Exercises on drawing projections from perspective and	Practical	Class assignment weekly and monthly tests

			deducing the third projection		
14	3	The student will draw painting.	Drawing a painting that includes 3D drawings	Practical	Class assignment weekly and monthly tests
15	3	The student will draw painting.	Drawing a painting that includes perspective and its projections	Practical	Class assignment weekly and monthly tests

1. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Daily preparation	10
Daily practical test	25
Monthly practical test	50
Practical activity	15

12. Learning and Teaching Resources

Required textbooks (curriculum books if applicable)	Remember all textbooks, if any.
Main references (sources)	References (sources), if any, should be noted. A variety of engineering drawing books prepared by the department.
Recommended books and references (scientific journals, reports...)	Write the name of the recommended reference for each course Books that are concerned with applied engineering drawing. 2. Reports on applied engineering drawing.
Websites & References	Remember the websites (such as the department's YouTube channel or any link that can be used according to the specialization Websites that focus on engineering drawing.

First Level / Second Semester

principles of Automotive Electrical and Electronic Technology

1. Course Name: principles of Automotive Electrical and Electronic Technology	
2. Course Code: ATD104	
3. Semester / Year: first semester/first year	
4. Description Preparation Date: 1/ 11 / 2025	
5. Available Attendance Forms: mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdallah Basim Jasim Email: Eng.abdallh7491@ntu.edu.iq	
8. Course Objectives	
Course Objectives	1.To provide students with a fundamental understanding of basic electrical and electronic principles as applied to automotive systems . 2.To familiarize students with the operation and maintenance of key automotive electrical systems, including charging, starting, and ignition systems . 3.To develop problem-solving and diagnostic skills related to common electrical and electronic issues in vehicles.
9. Teaching and Learning Strategies	
Strategy	1- Lecture strategy 2- Research and discovery strategy 3- Project-Based Learning 4- experiential learning through lab work 5- practical exercises

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction to Electricity: Basic Concepts	Introduction	theoretical	Classroom and homework assignments, weekly and monthly exams
1	2	Introduction to Basic Electrical Measurements (Voltage, Current, Resistance) using a Multimeter	Safety Procedures in the Workshop,	practical	Classroom and homework assignments, weekly and monthly exams
2	2	To learn the difference between DC and AC current	DC Circuits: Series and Parallel Connections	theoretical	Classroom and homework assignments, weekly and monthly exams
2	2	learn how to dealing with Ohm's law	Building Simple Circuits, Applying Ohm's Law	practical	Classroom and homework assignments, weekly and monthly exams
3	2	To learn the use of each component in the electrical circuits	Electrical Components	theoretical	Classroom and homework assignments, weekly and monthly exams
3	2	Learn how to use electrical components in the circuits	Identifying and Testing Common Electrical Components	practical	Classroom and homework assignments, weekly and monthly exams
4	2	To learn the basic knowledge of batteries types, construction and operation	Batteries	theoretical	Classroom and homework assignments, weekly and monthly exams
4	2	Learn how to dealing with the different types of batteries and how to charging and test the batteries	Battery Testing (Hydrometer, Load Test), Battery Charging Basics	practical	Classroom and homework assignments, weekly and monthly exams
5	2	To learn the basics of electromagnetic and magnetic fields, and how to generate electricity.	Electromagnetism and Magnetic Fields	theoretical	Classroom and homework assignments, weekly and monthly exams
5	2	Learning the basics of generate electricity from the	Demonstrating Electromagnetic Principles, Simple	practical	Classroom and homework assignments,

		relation between magnetic field and electricity	Motor/Generator Experiment		weekly and monthly exams
6	2	To learn the basic principles of starting systems in cars	Starting Systems	theoretical	Classroom and homework assignments, weekly and monthly exams
6	2	Learning how starting systems in automobile works and engines are start running	Operating a Starter Motor (if available), Identifying Starter Motor Components	practical	Classroom and homework assignments, weekly and monthly exams
7	2	To understanding the wiring of starting system in cars and the work of starting system components	Starting System Circuit: Solenoid and Wiring	theoretical	Classroom and homework assignments, weekly and monthly exams
7	2	To understanding the wiring of starting system in cars and the work of starting system components	Tracing the Starting Circuit, Understanding the Role of the Solenoid	practical	Classroom and homework assignments, weekly and monthly exams
8	2	To understand the basic of charging battery in cars and the principles of charging systems	Charging Systems	theoretical	Classroom and homework assignments, weekly and monthly exams
8	2	To understanding how the alternator generates electricity with the component of charging system	Understanding the Role of the Alternator, Identifying Alternator Components	practical	Classroom and homework assignments, weekly and monthly exams
9	2	To understanding the wiring of charging system in cars and the work of charging system components	Charging System Circuit: Voltage Regulator	theoretical	Classroom and homework assignments, weekly and monthly exams
9	2	To understand the function of voltage regulator in charging system	Explaining the Function of the Voltage Regulator, Simple Charging System Diagram	practical	Classroom and homework assignments, weekly and monthly exams
10	2	To understand the basic of ignition systems in cars and the principles of ignite the air/fuel mixture	Ignition Systems	theoretical	Classroom and homework assignments, weekly and monthly exams
10	2	To understand operation of spark plug and identifying spark plug types	Spark Plug Operation, Identifying Spark Plug Types	practical	Classroom and homework assignments,

					weekly and monthly exams
11	2	To understanding the wiring of ignition system in cars and the work of ignition system components	Ignition System Circuit	theoretical	Classroom and homework assignments, weekly and monthly exams
11	2	To understand the principle of function of the ignition coil in ventage cars	Explaining the Function of the Ignition Coil, Simple Ignition Circuit Diagram	practical	Classroom and homework assignments, weekly and monthly exams
12	2	To know the basics of diagnostics electrical systems in car using simple tools such as multimeter	Electrical System Diagnostics	theoretical	Classroom and homework assignments, weekly and monthly exams
12	2	To know the basics of diagnostics electrical systems in car using simple tools such as multimeter	Multimeter Techniques, Testing Automotive Components	practical	Classroom and homework assignments, weekly and monthly exams
13	2	To be capable read and understand the wiring diagrams of modern automobile	Wiring Diagrams: Basic Interpretation	theoretical	Classroom and homework assignments, weekly and monthly exams
13	2	Practice to read the wiring diagrams of modern automobile	Reading and Interpreting Simple Automotive Wiring Diagrams	practical	Classroom and homework assignments, weekly and monthly exams
14	2	have a case study for the student to understand the procedure of diagnosing the starting systems	Troubleshooting Case Studies: Starting Problems	theoretical	Classroom and homework assignments, weekly and monthly exams
14	2	have a case study for the student to understand the procedure of diagnosing the starting systems	Diagnosing and Troubleshooting Simulated Starting Problems	practical	Classroom and homework assignments, weekly and monthly exams
15	2	have a case study for the student to understand the procedure of diagnosing the charging systems	Troubleshooting Case Studies: Charging Problems	Theoretical + practical	Classroom and homework assignments, weekly and monthly exams

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Daily preparation	10
Daily oral exam	20
Monthly and written tests	40
Reporting	20
Practical activity	10

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	not available
Main references (sources)	Automotive Wiring and Electrical Systems Author: Tony Candela Automotive Electrical Systems by Deln Learning Automotive Electricity and Electronics James D. Halderman
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Sites that care about automobile electricity.

First Level / Second Semester / Computer

Course Description

Introducing the student to the concepts and definitions of computers – identifying the computer and its characteristics and features, comparing its different types, identifying the software of operating systems, mastering the Microsoft Office 2020 package (Word, Excel, PowerPoint).

1. Course Title: Computer	
2. Coursecode for NTU103:	
3. Semester/Year: Second Semester/First Year/ Bologna Track	
4. Date this description was created: 1/9/2025	
5. Available Forms of Attendance: Mandatory	
6. Number of Hours (Total)	
(2 theoretical + 3 lab.) weekly*15 weeks = 75 hours	
7. Name of the Rapporteur Administrator (name all names, if there is more than one)	
Name: Rafal Khalid Jassim	
Email: mti.lec228.rafal@ntu.edu.iq	
8. Course Objectives (General Course Objectives)	
1. Develop the ability with basic knowledge related to the physical and software structure of the computer, and distinguish between different systems and technologies.	Objectives

2. Providing the student with practical skills in installing and managing operating systems (e.g. Windows), dealing with advanced settings and basic system maintenance (formatting & configuration).
3. Enable the student to use the Office 2020 software package with high efficiency in academic reporting, statistical data analysis, and professional presentation design.

Course Outcomes, Teaching, Learning and Assessment Methods

Course Outcomes

Definition: It is the knowledge, skills, and values that a student is expected to acquire after studying a computer course. These outputs include cognitive aspects (theoretical understanding), skill (practical application), and emotional (attitudes and values).

Importance: It shows the student what they can learn and apply in the field of computers.

- 1– Helps the faculty member organize the content in a meaningful and coherent way.
- 2– It is used as a basis for measuring student performance and the extent to which learning goals have been achieved.
3. Ensure that the course is compatible with the objectives of the academic program.

How they are determined: Academic program objectives

1. Skills required in the labor market (such as the ability to meet the needs in the field of computing, dealing with the Windows operating system, formatting, and managing files efficiently).
2. National or International Academic Standards (
3. Input from stakeholders (e.g. industry experts and faculty).

Evaluation Methods	Teaching and Learning Methods	Outputs
- Homework, Daily Written Tests - Monthly and theoretical tests (theoretical and practical) - Classroom participation and continuous evaluation of student performance in practice	Theoretical Lectures Interactive presentations and lessons. Laboratories and Practical Exercises Case Studies and Problem Analysis Group Projects and Individual Assignments	Knowledge A1 - To enable the student to know and understand the computer and a deep understanding of the hardware components and how they integrate with software to carry out operations, in addition to understanding the role of the CPU and memory in the speed and efficiency of the system. A2 - Familiarity with the types of operating systems and their functions in resource management, and identifying software classifications from programming languages, applications, and service programs. A3 – Understanding professional standards for document formatting and data analysis in calculation . ;tables
Daily Written Tests Weekly Reporting Monthly and theoretical tests	Laboratories and Practical Exercises Group Projects and Individual Assignments	B. Skills B1 – Sound scientific research skills, constructive scientific discussions, and opinion expression. B2 – Skills of use and development.

(theoretical and practical) Class participation s (evaluation of practical presentation s in front of classmates) and continuous evaluation of the student's performance in practice	Field Visits E-Learning and Open Source	B3 – Thinking skills and enabling the student to understand and solve scientific problems related to the calculator. B4. Skills and the ability to apply the theoretical and practical experience gained from his studies in the fields of practical life.
Classroom activities that demonstrate commitment or respect for values Personal interviews or discussions. Peer evaluation. Evaluate teamwork.	Collaborative learning and working in groups (to foster team spirit) Classroom discussions on environmental/social issues. Case studies with an ethical or environmental dimension. For volunteer or community activities.	C. Values A1– Learning how to deal with others and work in a team spirit. C2. Learning and decision-making ability to address mistakes. A3– Encouraging the development of students' scientific thought in memorization and guessing. A4– Follow-up on the presence at the training sites and the extent of benefit. A5. Submit and discuss reports.

9. Teaching and Learning Strategies

- 1– Self–Direction Strategy.
- 2– Participatory learning strategy.
- 3– Role–playing strategy.
- 4– The strategy of the discussant and dialogue.
- 5– Lecture strategy.
- 6– Research and discovery strategy.
- 7– Brainstorming strategy.

Strategy

10. Course structure (**remember all theoretical and practical vocabulary**)

The week	Watch es	Required Learning Outcomes	Module Name / or Subject	Teaching Method	Evaluation Method
1	2	The student should know the basic principles of the computer and its components (hardware and software)	General Principles: About Computers and Types of Operating Systems	theoretical	,Class ,homework weekly and monthly exams
	2	The student should be familiar with the computer, how to operate it, and its types.	Desktop in the operating system (Windows)	practical	,Class ,homework weekly and monthly exams

2	2	The student should be familiar with the operating system (Windows), Can install Windows (Configuration)	Operating Systems (Windows),	theoretical	,Class ,homework weekly and monthly exams
	2	Starlist and command dialog box in the operating system	Star List and Command Dialog Box in the operating system Practical Application	practical	,Class ,homework weekly and monthly exams
3	2	Control Panel, Drivers, Folders, Files, Cut, Copy, Paste, Shortcuts, Right Click Menu, Settings Menu,	Control Panel, Drivers, Folders, Files, Cut, Copy, Paste, Shortcuts, Right Click Menu, Settings Menu,	theoretical	,Class ,homework weekly and monthly exams
	2	Desktop Features	Desktop Features	practical	,Class ,homework weekly and monthly exams
4	2	Introduction to using Microsoft Word 2020	Microsoft Word 2020, Home Tab	theoretical	,Class ,homework weekly and monthly exams
	2	Working with Windows Windows	Windows Software in Windows	practical	,Class ,homework

					weekly and monthly exams
5	2	Introduction to using Microsoft Word 2020	Home Tab Clipboard Collection, Drawers	theoretical	,Class ,homework weekly and monthly exams
	2	Files and folders in Windows	Files and folders in Windows	practical	,Class ,homework weekly and monthly exams
6	2	Introduction to using Microsoft Word 2020	Home Tab Review Collection, Presentation & Design	theoretical	,Class ,homework weekly and monthly exams
	2	Dealing with Trash in Windows, How to Get Help in Windows	Dealing with Trash in Windows, How to Get Help in Windows	practical	,Class ,homework weekly and monthly exams
7	2	Using Microsoft Excel 2020	Introduction to Excel	theoretical	,Class ,homework weekly and monthly exams
	2	Using Microsoft Word 2020	Using Microsoft Word 2020	practical	,Class ,homework

					weekly and monthly exams
8	2	Be able to solve test problems	Midterm Exam	theoretical	,Class ,homework weekly and monthly exams
	2	Be able to solve test problems and apply my work	Midterm Exam.	practical	,Class ,homework weekly and monthly exams
9	2	Using Microsoft Excel 2020	Introduction to Microsoft Excel 2020	theoretical	,Class ,homework weekly and monthly exams
	2	Dealing with texts in Word	Page layout in Word, tablefor in Word	practical	,Class ,homework weekly and monthly exams
10	2	Using Microsoft Excel 2020	Home tab, Formatting Group	theoretical	,Class ,homework weekly and monthly exams
	2	Dealing with Tables in Excel	Home tab in Excel	practical	,Class ,homework weekly and

					monthly exams
11	2	Using Microsoft Excel 2020	Cell Types in Excel	theoretical	,Class ,homework weekly and monthly exams
	2	Practical Application of Excel	Insert equations and symbols, solve a simple problem in Excel	practical	,Class ,homework weekly and monthly exams
12	2	Using Microsoft PowerPoint 2020	Using Microsoft PowerPoint 2020	theoretical	,Class ,homework weekly and monthly exams
	2	Using Microsoft PowerPoint 2020	Practical application to using Microsoft PowerPoint 2020	practical	,Class ,homework weekly and monthly exams
13	2	Introduction to Internet Use, Internet Explorer, Start Menu, and Internet Explorer Browser Lists	Introduction to Internet Use, Internet Explorer, Start Menu, and Internet Explorer Browser Lists	theoretical	,Class ,homework weekly and monthly exams

	2	Internet Usage, Internet Explorer, Start Menu, and Internet Explorer Browser Menus	Internet Usage, Internet Explorer, Start Menu, and Internet Explorer Browser Menus	practical	,Class ,homework weekly and monthly exams
14	2	Use of Search Engines Proficient in using Google and Yahoo to search for information	Use of Search Engines Proficient in using Google and Yahoo to search for information	theoretical	,Class ,homework weekly and monthly exams
	2	Ability to create and use email: Yahoo, Hotmail	Ability to create and use email: Yahoo, Hotmail	practical	,Class ,homework weekly and monthly exams
15	2	Be able to review all matters related to the material	Overview: Focus on linking topics and cross-cutting issues.	theoretical	,Class ,homework weekly and monthly exams
	2	Be able to review all matters related to the material	Solving a variety of problems including balance, friction, and positions	practical	Class, homework, weekly and monthly exams

11. Course Evaluation

Distribution of grades out of 100 according to the tasks assigned to the student such as daily preparation, daily oral tests, monthly or written tests, reports... etc.

Quick Quizzes	10
Duties	5
Monthly and written testing	10
practical	25
Final Exam	50

12. Learning and Teaching Resources

Required textbooks (curriculum books, if applicable)	Remember all the methodological books if any
Main References (Sources)	Mention reference(s) if any 1. Computer Literacy BASICS: A Comprehensive Guide to IC3 , 5th Edition.
Recommended books and references (scientific journals, reports...)	Write the name of the recommended reference for each course
References and Websites	Mention websites (such as the department's YouTube channel or any link that can be used according to the specialization) the Websites that are interested in computer fields