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

Academic Program and Course Description Guide

2025

Ministry of Higher Education and Scientific Research

Ministry of Scientific Supervision and Evaluation

Department of Quality Assurance and Academic Accreditation

Academic program description form for colleges and institutes

University: Northern Technical University

Institute: Technical / Mosul

Dep.: Mechanical Techniques

Date:2/2/2025

Head of department

Dr. Yasser Hassan Ali

Vice dean of scientific affairs

Ahmed Jadaan Ali;

The file was reviewed by the Quality Assurance and

University Performance Division

Name of the official of the Quality Assurance and

University Performance Division: Mohammed Khalid Yousif

Date: 5/2/2025

signature:

Authentication of the Dean

1. Program Vision

It is one of the main technical departments, and it moves towards expanding the base of technical education and its modern applications to be a leader in providing accredited technical services in the spirit of competition and cooperation with society.

2. Program Message

The Department of Mechanics adopts a general message based in its general form on the framework of technical education in Iraq, a message that it seeks to achieve every year to highlight the excellence of the department. The general objectives are focused on graduating technical cadres at the level of education and training that are able to comprehend technology systems and support the process of technical development to keep pace with rapid global technical developments.

The private message includes the following:

1. The use of computer and Internet technologies in education and training.

2.Activating the relationship with the private sector in the fields of training.

3.Follow up the development of the curriculum of training plans and then modernize laboratories and workshops.

4.Interaction with the labor market and the needs of society in rehabilitation and training.

3. Program Objectives

The department aims to prepare the technical staff that be a link between the specialist and the skilled worker, and the department prepares the graduated student and provides him with theoretical, applied and practical information to be able to carry out the work entrusted to him.

4. Other external influences

Nothing

5. Program Accreditation

Nothing

6. Program structure for the first and second levels

Program Structure	Number of Courses	Unit of study	Percentage	Reviews*
University Requirements	10	18	55%	4 essential, 6 optional
Institute Requirements	7	16	44%	5 essential
Department Requirements	27	96	28%	21 essential, 5 optional
Summer Training	Fulfilled	-------	-------	
Other	Nothing			

* It can include notes whether the course is basic or optional.

7. Program Description

Credit Hours		Course Name	Course or Course Code	Year/Level
practical	theoretical			
	2	Democracy and Human Rights	NTU 100	2024-2025/ First
	2	English Language 1	NTU 101	
1	1	Computer 1	NTU 102	
	2	Arabic Language 1	NTU 103	
	2	Sports (optional)	NTU 104	
	2	mathematics	MTI100	
	3	Mechanical Industries	MTI101	
	3	Engineering Drawing	MTI102	
	2	Calculus	MTI103	
3	2	Engineering Mechanics/Static	MET120	
3	2	Engineering Mechanics/ Dynamics	MET121	
3	2	Measurements and Casting	MET122	
3	2	Welding	MET123	
2	2	Engineering Materials	MET124	
4	---	Mechanical drawing	MET125	
2	2	Thermodynamics	MET126	
6	---	Advanced Mechanical Industries	MET127	
2	2	Electrical Technology	MET128	
	2	Strength of Materials	MET129	
	2	Renewable Energy	MET130	
	---	Summer Training	MET131	
	2	English Language 2	NTU200	2024-2025 / II
		Computer	NTU202	
	1	Crimes of the Baath regime in Iraq	NTU 203	
	1	Professional Ethics	NTU 204	
	2	Project 1	TIMO206	
	2	Principles of occupational safety	TIMO207	
	2	Industrial Management	TIMO208	

	2	Machine Parts Technology 1	METP210	
	2	Machine Parts Technology 2	METP211	
2	2	Manufacturing processes 3	METP212	
2	2	Manufacturing processes 4	METP213	
6	---	Workshops 3	METP214	
6	---	Workshops 4	METP215	
2	2	Metals1	METP216	
2	2	Metal 2	METP217	
3		Industrial Drawing 1	METP218	
3		Industrial Drawing 2	METP219	
2	1	Computer Applications 1	METP220	
2	1	Computer Applications 2	METP221	
2		Project 2	METP222	
	2	Strength of Material 2	METP223	
2	2	Welding and metal forming	METP224	
	2	Quality control	METP225	

8. Expected learning outcomes of the program

Knowledge

Cognitive Objectives

1- Identify how to collect information for the requirements of the public interest.

2- Identify the equipment and laboratories and how to operate and work with laboratory equipment.

3- How to deal with these devices, especially metal inspection devices.

4- Follow the industrial safety service in laboratories.

Skills

1 – The skill of training on all laboratories and the extent of danger.

2 – The skill of connecting devices and conducting experiments.

3 – The skill of caring for laboratory equipment and how to deal with them.

4 - The skill of designing and establishing laboratories.

Values
1- The student acquires the concepts and basics of mechanical techniques, including manufacturing processes, metal production, types of metals and their mechanical properties, and automotive mechanics. 2- Analyzing the problems the employees face and how to develop the necessary solutions. 3. Evaluate the proposed solutions and choose the optimal ones.

9. Teaching and Learning Strategies

Theoretical lectures, self-learning, trips, seminars, scientific developments, practical training in laboratories, summer training.

10. Evaluation methods

Daily written exams, semester and final exams (theoretical and practical) Submission of weekly reports, seminars, as well as daily attendance and participation, classroom activities

11-Faculty

Faculty members

Academic rank	specialization		Special requirements/skills (if applicable)		preparation of the teaching staff	
	General	Specialized			Lecturer	Permanent staff
Professor	Mechanical	Application				Permanent staff

Teacher	Mechanical	Production & Metals				Permanent staff
Teacher	Mechanical	Production & Metals				Permanent staff
Teacher	Mechanical	Production & Metals				Permanent staff
Assistant Lecturer	Mechanical	Production & Metals				Permanent staff
Assistant Lecturer	Mechanical	Thermal forces				Permanent staff
Assistant Lecturer	Mechanical	Thermal forces				Permanent staff
Assistant Lecturer	Mechanical	Fluids and Thermals				Permanent staff
Assistant Lecturer	Mechanical	Production & Metals				Permanent staff
Assistant Lecturer	Mathematics	Statistics				Permanent staff
Assistant Lecturer	English	Translation				Permanent staff
Assistant Lecturer	Arabic language	Arabic language				Permanent staff

Professional Development
Mentoring new faculty members
Professional development of faculty members

12. Acceptance Criterion

- The criterion for accepting the student is according to the central admission within the plan of the ministry and the student's branch in the preparatory school, his rate and desire, after the student is interviewed in the institute.

13. **The most important sources of information about the program**
-Educational Bags − Textbooks - External sources (Internet) - Scientific research and its latest developments

14. Program Development Plan
1- Add information in all topics related to mechanics. 2 - Identify modern scientific developments. 3 - Participation in international and local conferences. 4 - Participation in scientific workshops inside and outside Iraq. 5- Hosting scientific competencies in the field of specialization

First level

Study Plan 2023-2024						
Northern Technical University		**Mosul Technical Institute**		**Department: Mechanical Techniques**		
Study Level (First)						
Code	**Number of Units**	**Number of practical hours**	**Number of theoretical hours**	**Course Name**		**Type of Requirement**
				In English	**In Arabic**	
NTU100	**2**	**0**	**2**	**Humans Rights and Democracy (Compulsory)**	الديمقراطية وحقوق الانسان (إجباري)	**University Requirements (14 units) 4**

NTU101	**2**	**0**	**2**	**English Language 1(Compulsory)**	لغة انكليزية 1 (إجباري)	**compulsory courses + 2 elective courses**
NTU102	**3**	**2**	**1**	**Computer's Principles1 (Compulsory)**	مبادئ الحاسوب 1 (إجباري)	
NTU103	**3**	**2**	**1**	**Computer's Principles2 (Compulsory)**	مبادئ الحاسوب 2 (إجباري)	
NTU104	**2**	**0**	**2**	**Arabic Language (optional)**	اللغة العربية (اختياري)	
TIMO105	**2**	**1**	**1**	**Sport (Optional)**	الرياضة (اختياري)	
TIMO110	**2**	**0**	**2**	**Mathematics 1 (Compulsory)**	رياضيات1 (اجباري)	**Requirements (10 units) 3 compulsory courses**
TIMO111	**2**	**0**	**2**	**Mathematics 2 (Compulsory)**	رياضيات 2 (اجباري)	
TIOM112	**6**	**6**	**0**	**Workshop 1 (Compulsory)**	معامل ميكانيكية (اجباري)	
METP120	**3**	**1**	**2**	**Engineering Mechanics (Statics) (Compulsory)**	الميكانيك الهندسي/ السكوني (اجباري)	**Specialization Requirements (37 units)11 compulsory courses + 2 elective courses**
METP121	**3**	**1**	**2**	**Engineering Mechanics (Dynamics) (Compulsory)**	ميكانيك (علم الحركة) (اجباري)	
METP122	**3**	**1**	**2**	**Measurements & Casting (Compulsory)**	القياسات والسباكة (اجباري)	
METP123	**3**	**1**	**2**	**Welding (Compulsory)**	اللحام (اجباري)	
METP124	**2**	**0**	**2**	**Engineering Materials (Compulsory)**	مواد هندسية (اجباري)	
METP125	**4**	**4**	**0**	**Engineering Drawing (Compulsory)**	رسم هندسي (اجباري)	
METP126	**4**	**4**	**0**	**Mechanical Drawing (Compulsory)**	رسم ميكانيكي (اجباري)	

METP127	**2**	**0**	**2**	**Principles of Thermo-Dynamics (Compulsory)**	مبادئ الديناميك الحراري (اجباري)	
METP128	**6**	**6**	**0**	**Advanced Workshops (Compulsory)**	معامل متقدمة (اجباري)	
METP129	**2**	**2**	**0**	**Strength of Material (Compulsory)**	مقاومة مواد (اجباري)	
METP130	**3**	**2**	**1**	**Electricity Technology (optional)**	تكنلوجيا الكهرباء (اختياري)	
	2	**0**	**2**	**Renewable Energy (optional)**	الطاقة المتجددة (اختياري)	
METP131	**0**	**0**	**0**	**Summer Training**	التدريب الصيفي (اجباري)	
61		**33**	**28**	**Total practical and theoretical hours**		
61				**Total Units**		

Second level

Study Plan 2023-2024						
Northern Technical University **Mosul Technical Institute** **Dept: Mechanical Techniques**						
Study Level (Second)						
Code	**Number of Units**	**Number of practical hours**	**Number of theoretical hours**	**Course Name**		**Type of Requirement**
				In English	**In Arabic**	
NTU200	**2**	**0**	**2**	**Crimes of Defunct Baath Party (Compulsory)**	جرائم حزب البعث البائد (اجباري)	**University Requirements (6 units) 3 compulsory courses**
NTU201	**2**	**0**	**2**	**English Language 2 (Compulsory)**	لغة انكليزية 2 (اجباري)	

NTU202	**2**	**0**	**2**	**Professional Ethics**	اخلاقيات المهنة (اجباري)	
METP210	**2**	**2**	**0**	**Project 1**	مشروع 1 (اجباري)	**Specialization Requirements (47 units) (13 compulsory courses + 2 elective courses)**
METP211	**2**	**2**	**0**	**Project 2**	مشروع 2 (اجباري)	
METP212	**3**	**0**	**3**	**Machines Design (Compulsory)**	تصميم المكائن (اجباري)	
METP213	**2**	**0**	**2**	**Fluids Mechanics (Compulsory)**	ميكانيك الموائع (اجباري)	
METP214	**3**	**0**	**3**	**Metals Forming Processes (Compulsory)**	عمليات تشكيل المعادن (اجباري)	
METP215	**3**	**0**	**3**	**Machining Processes (Compulsory)**	عمليات تشغيل المعادن (اجباري)	
METP216	**6**	**6**	**0**	**Primary Machining Workshops**	ورش تشغيل اولية (اجباري)	
METP217	**6**	**6**	**0**	**Advanced Machining Workshops**	ورش تشغيل متقدمة (اجباري)	
METP218	**4**	**2**	**2**	**Metallurgy (Compulsory)**	علم المعادن (اجباري)	
METP219	**4**	**2**	**2**	**Internal Combustion Engines (Compulsory)**	مكائن الاحتراق الداخلي (اجباري)	
METP220	**3**	**0**	**3**	**Heat Transfer (Compulsory)**	انتقال حرارة (اجباري)	
METP221	**3**	**2**	**1**	**Engineering Computer Applications (Compulsory)**	تطبيقات الحاسوب الهندسية (اجباري)	
METP222	**2**	**0**	**2**	**Industrial Management (Compulsory)**	الادارة الصناعية (اجباري)	
METP223	**2**	**0**	**2**	**Quality Control (optional)**	السيطرة النوعية (اختياري)	
	2	**0**	**2**	**Mechanical Vibration (optional)**	ميكانيك الاهتزازات (اختياري)	

53	**22**	**31**	**Total theoretical and practical hours**
53			**Total Units**

Program Skills Outline															
Learning outcomes required from the program															
Values				Skills				Knowledge				Basic or optional	Course Name	Course Code	Year/Level
C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
		/			/				/			Compulsory	Democracy and Human Rights	NTU 100	2023-2024/First
		/					/			/		Compulsory	English Language 1	NTU 101	
		/					/	/			/	Compulsory	Computer 1	NTU 102	
		/					/				/	Compulsory	Arabic Language 1	NTU 103	
		/					/				/	optional	Sports (optional)	NTU 104	
												Compulsory	mathematics	MTI100	
			/				/				/	Compulsory	Mechanical Laboratories	MTI101	
			/				/				/	Compulsory	Engineering Drawing	MTI102	
		/				/					/	Compulsory	Calculus	MTI103	
			/				/				/	Compulsory	Engineering Mechanics/Static	MET120	
			/				/				/	Compulsory	Engineering/Kinetic Mechanics	MET121	
			/				/				/	Compulsory	Measurements and plumbing	MET122	
			/				/				/	Compulsory	weld	MET123	
			/				/				/	Compulsory	Engineering Materials	MET124	

			/				/				/	**Compulsory**	**Mechanical drawing**	**MET125**	
			/				/				/	**Compulsory**	**Thermodynamics**	**MET126**	
			/				/				/	**Compulsory**	**Advanced mechanical laboratories**	**MET127**	
			/				/				/	**Compulsory**	**Electrical Technology**	**MET128**	
			/				/				/	**Optional**	**Material bargaining**	**MET129**	
			/				/				/	**Optional**	**Renewable Energy**	**MET130**	
			/				/				/	**Compulsory**	**Summer Training**	**MET131**	
			/				/				/	**Compulsory**	**English Language 2**	**NTU200**	2023-2024/II
		/					/				/	**Compulsory**	**Computer**	**NTU202**	
		/					/				/	**Compulsory**	**Crimes of the Baath regime in Iraq**	**NTU 203**	
		/					/				/	**Compulsory**	**Professional Ethics**	**NTU 204**	
		/					/				/	**Compulsory**	**Project 1**	**TIMO206**	
		/	/				/				/	**Optional**	**Principles of occupational safety**	**TIMO207**	
		/	/				/				/	**optional**	**Industrial Management**	**TIMO208**	
		/	/				/				/	**Compulsory**	**Machine Parts Technology 1**	**METP210**	
		/	/				/				/	**Compulsory**	**Machine Parts Technology 2**	**METP211**	
		/	/				/				/	**Compulsory**	**Manufacturing processes 3**	**METP212**	
		/	/				/				/	**Compulsory**	**Manufacturing processes 4**	**METP213**	

		/	/				/				/	**Compulsory**	**Coefficient 3**	**METP214**	
		/	/				/				/	**Compulsory**	**Coefficient 4**	**METP215**	
		/	/				/				/	**Compulsory**	**Metals1**	**METP216**	
		/	/				/				/	**Compulsory**	**Metal 2**	**METP217**	
		/	/				/				/	**Compulsory**	**Industrial Drawing 1**	**METP218**	
		/	/				/				/	**Compulsory**	**Industrial Drawing 2**	**METP219**	
		/	/				/				/	**Compulsory**	**Computer Applications 1**	**METP220**	
			/				/				/	**Compulsory**	**Computer Applications 2**	**METP221**	
			/				/				/	**Compulsory**	**Project 2**	**METP222**	
			/				/				/	**Optional**	**Material Resistance 2**	**METP223**	
			/				/				/	**Optional**	**Welding and metal forming**	**METP224**	
			/				/				/	**Optional**	**Quality control**	**METP225**	

Course Description Form

First stage / first and second semester

Course Description

The student will be able to understand the principles of engineering Mechanics1 and how to perform design calculations for each part when a collapse occurs due to external forces or structure through the stresses that form in that part.

1. Educational institution	Northern Technical University – Mosul Technical Institute
2. Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3. Course Name/Code	Principles of Engineering Mechanics 1
4. Name of Teaching Lecturer(s)	Instructor: Iman Zidan Ali
5. Available Attendance Forms	Attendance (five hours per week)
6. Semester / Year	2024-2025
7. Number of Credit Hours (Total)	75 hours
8. The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Clarify the role and principles of engineering mechanics, 2. The relationship that binds the parts together, 3. How to make some calculations to design the parts and identify all the factors affecting them.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1. Recognizing the concepts of engineering mechanics.	

2. Expand students' perceptions and enhance the concept of design by giving them principles and design calculations.
3. Give the student experience in fees for different machine parts.

B - Skills objectives of the course.

1. A detailed study of the engineering design of the principles of engineering mechanics.
2. Study the mathematical details that the student needs during the principles of engineering mechanics.
3. Prepare the technologist to be a successful technician by learning the correct principles of the mechanical techniques specialization of the production branch.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Through discussion, students are involved by solving some practical problems.
4. Asking the students to visit the library and the international information network (Internet) to obtain additional knowledge of the study materials and to observe, maintain and repair the machines in the machinery workshop at the Institute.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student order and cleanliness
2. Teaching patience and stretching
3. Acquire the quality of good manners and good dealing with auditors

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical issues, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways.

3. Interrogate the students through discussion sessions by asking thinking questions (how, why, when, where, any) for specific topics. 4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new. 5. Providing students with practical skills by reviewing the machines inside and outside the institute.
Evaluation methods
The evaluation is carried out on the basis of: 1. First semester exam (theoretical). 2. Year's work: Daily tests, assignments, attendance and participation are taken into account. 3. Final exam (theoretical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in measurements 2. Developing the skill of cooperation and the alternative system 3. Enabling students to subject the technology of machine parts in its applied and cognitive aspects. 4. Develop the student's ability to analyze information and interpret the data obtained through calculations. 5. Enable the student to conduct a field survey to identify and solve problems on the ground.

10. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Static, fundamental concepts, force, Scalars and Vectors, Forces polygon, Cartesian Components	Student comprehension of the subject	5 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Analysis of Forces	Student comprehension of the subject	5hr	Second

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	5 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Resultant of Concurrent, Coplanar Force system (2-D)	Student comprehension of the subject	5 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Moments	Student comprehension of the subject	5 hours	V
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Couples, transformation of the Couple and the force	Student comprehension of the subject	5 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Resultant of non - Concurrent, Coplanar force system (3-D))	Student comprehension of the subject	5 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Equilibrium, free body diagram (F.B.D.)	Student comprehension of the subject	5 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Equilibrium Conditions (2-D)	Student comprehension of the subject	5 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	5hr	Tenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Friction, Dry Friction	Student comprehension of the subject	5 hours	Eleventh

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Center of Gravity, Centroid (length, area), Centroid of Simple area	Student comprehension of the subject	5 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Centroids of Composite areas	Student comprehension of the subject	5 hours	Thirteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Moment of inertia (Simple and Composite areas)	Student comprehension of the subject	4 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	5 hours	Fifteenth

12. Infrastructure	
1. Required text books	**Engineering Mechanics** Book
2. Main references (sources)	1. ENGINEERING MECHANICS: STATICS **2.**Engineering Mechanics Statics and Dynamics
A-Recommended books and references (scientific journals, reports, ...)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Machinery Parts Website

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show
Minimum number of students	8

Maximum number of students	16
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the design	

Course Description Form

Course Description

The student understands the principles of engineering mechanics2 and how to perform design calculations for each part when a collapse occurs due to external forces or structure through the stresses formed in that part.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Principles of Engineering Mechanics 2
4.Name of Teaching Lecturer(s)	Instructor: Iman Zidan Ali
5.Available Attendance Forms	Attendance (five hours per week)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	75 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Clarifying the role of the principles of engineering mechanics 2. The relationship that binds these parts together, 3. How to make some calculations to design these parts and identify all the factors affecting them.	

10. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives 1. Recognize the concepts of engineering mechanics. 2. Expand students' perceptions and enhance the concept of design by giving them principles and design calculations. 3. Give the student experience in fees for different machine parts.
B - Skills objectives of the course. 1. A detailed study of the engineering design of the principles of engineering mechanics 2. Study the mathematical details that the student needs during the principles of engineering mechanics 3. Prepare the technologist to be a successful technician by learning the correct principles of the mechanical techniques specialization of the production branch.

Teaching and learning methods
1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments. 2. Solve a set of practical and practical examples by the subject teacher. 3. Through discussion, students are involved by solving some practical problems. 4. Asking the student to visit the library and the international information network (Internet) to obtain additional knowledge of the study materials and to observe, maintain and repair the machines in the machinery workshop at the Institute.
Evaluation methods
1. Daily interaction and topic preparation. 2. Daily and weekly tests. 3. Quarterly and final exams.
C. Emotional and value goals 1. Teaching the student order and cleanliness 2. Teaching patience and stretching 3. Acquire the quality of good manners and good dealing with auditors
Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways.
3. Interrogate the students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new.
5. Providing students with practical skills by reviewing the machines inside and outside the institute.

Evaluation methods

The evaluation is carried out on the basis of:
1. First semester exam (theoretical).
2. The work of the year takes into account daily tests, duties, attendance and participation.
3. Final exam (theoretical).

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

6. Developing the skill of accuracy in measurements
7. Developing the skill of cooperation and the alternative system
8. - Enabling students to subject the technology of machine parts in its applied and cognitive aspects.
9. - Develop the student's ability to analyze information and interpret the data obtained through calculations.
10. - Enable the student to conduct a field survey to identify and solve problems on the ground.

11. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	Weeks
Discussion, Quick Exam, Problem	Theoretical lecture and the use of the screen and the	Dynamics type of motion, Linear	Student comprehension of the subject	5hours	First

Solving, Homework	means of explanation	motion with constant speed.			
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Linear motion with Constant acceleration.	Student comprehension of the subject	5 hours	Second
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Newton's Second Law	Student comprehension of the subject	5 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Curvilinear motion	Student comprehension of the subject	5 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Angular motion, Relative Motion.	Student comprehension of the subject	5 hours	V
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Work, Energy, Power	Student comprehension of the subject	5 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Strength of material: Fundamental concept, Loads, Stress, Strain Elasticity, Plasticity, Deformation.	Student comprehension of the subject	5 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Hook's Law, Stress - strain curve, type of stress.	Student comprehension of the subject	5 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Normal stress due to an axial load on 1- Uniformam Cross section area 2-	Student comprehension of the subject	5 hours	Ninth

		Variable cross section area.			
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Shear Stress	Student comprehension of the subject	5 hours	Tenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Torsional Stress	Student comprehension of the subject	5 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Beams, types of loads, types of beams.	Student comprehension of the subject	5 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Shear force (S.F.) & bending moment (B.M.) of Simple supported beam under an -axial load.	Student comprehension of the subject	5 hours	Thirteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Shear force (S.F.) & bending moment (B.M.) of Simple supported beam under uniform distributed Load	Student comprehension of the subject	5 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Shear force (S.F.) & bending moment (B.M.) of cantilever beam under an -axial load. Shear force (S.F.) & bending moment (B.M.) of cantilever beam under uniform distributed load.	Student comprehension of the subject	5 hours	Fifteenth

12. Infrastructure

1. Required text books	**Engineering Mechanics** Book
2. Main references (sources)	1. Engineering Mechanics Statics and Dynamics Authors R. C. Hibbeler · 2013 2. Strength of Material by Ferdinal L . Singer 3. Strength of Materials by R.S.Khurmi.
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Engineering Mechanics Websites

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show
Minimum number of students	8
Maximum number of students	30
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the design	

Course Description Form

Course Description: Engineering Materials

The student studies the engineering and physical properties of materials in terms of their composition and classifications, as well as their electrical, magnetic and chemical properties, in addition to identifying the most important metal materials involved in the world of engineering such as iron, copper and aluminum, as well as non-metallic materials such as plastic, rubber and dyes.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Engineering Materials
4.Name of Teaching / Technicians	Ibrahim Khalil Ibrahim Hassan
5.Available Attendance Forms	My presence (two theoretical hours)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	30 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Recognize the science of material properties 2. Identify engineering materials, their types and classifications 3. Learn about the atomic and crystal structure of materials, 4. recognize the magnetic and electrical properties of materials, 5. Learn about the chemical properties of substances 6. Identify some metallic and non-metallic materials involved in the engineering fields and their areas of use and applications.	

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1. The student learns the engineering properties of materials and how to benefit from them in practical application.
2. Expanding students' perceptions and enhancing their concept in terms of engineering materials and their applications.
3. The student knows how to choose from several subjects according to the desired application.

Teaching and learning methods

1. Provide students with the basics and topics related to the previous learning outcomes of skills to solve practical problems through presentation or lecture.
2. Solve a set of practical and practical examples by the subject teacher.
3. Asking the student to search for the properties of new materials and how to benefit from them in engineering fields
4. Asking the student to work in a group for the purpose of preparing reports and research in the fields of material properties

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.
2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
3. Using modern teaching methods such as animation films as well as videos for practical experiences.

Evaluation methods

The evaluation is carried out on the basis of:

1. Semester exam (theoretical).
2. The work of the year takes into account daily tests, assignments, attendance and reports.

3. Final exam (theoretical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in understanding the behaviors of materials, especially engineering 2. Enable students to theoretically attribute the material and link it with drawings and shapes. 3. Develop the student's ability to analyze information and interpret the data obtained through experiments that clarify the properties of materials.

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Surprise questions during the lecture and daily, monthly and final exams	Explanation of the topic Use a video and a legend and use Data Show		Definition of Engineering Materials	2	First
			Definition and clarification of atoms, element, bonds (bonds)	2	Second
			Types of bonds in engineering materials	2	Third
			Crystalline or crystalline materials	2	Fourth
			(H.C.P.)F.C.C((B.C.C) Crystalline Shapes	2	Fifth
			Mechanical properties of materials (stress, stress-strain curve)	2	Sixth
			Ductility, Collapse	2	Seventh
			Hardness, hardness test	2	Eighth
			Durability , Durability Test	2	Ninth
			Thermal properties of materials	2	Tenth

			Sequel	2	Eleventh
			Electrical properties of materials (flexible materials, insulating materials, metal materials,	2	Twelfth
			Factors affecting electrical conductivity	2	Thirteenth
			Sequel	2	Fourteenth
			Chemical properties of materials (corrosion, electrochemical chain, oxidation)	2	Fifteenth

11. Course Structure (Practical)					
Evaluation method	**Method of education**	**Unit / Subject Name**	**Required Learning Outcomes**	**Hours**	**The week**
			Iron, its most important ores extracted, blast furnace	2 hours	First
			Understand the property of rooting,	2 hours	Second
			Carbon steel, its most important types of uses	2 hours	Third
			Alloy alloy is the most important type of its uses	2 hours	Fourth
			Cast iron properties and uses	2 hours	V
			Sequel	2 hours	Sixth
			Copper, its alloys, properties and uses	2 hours	Seventh
			Aluminum and alloys properties of its uses	2 hours	Eighth
			Sequel	2 hours	Ninth
			Nickel and alloys properties of its uses	2 hours	X
			Special and tin and their alloys properties and uses	2 hours	Eleventh
			Sequel	2 hours	Twelfth
			Metallurgy powders (methods of obtaining metallized powders, methods	2 hours	Thirteenth
			Sequel	2 hours	Fourteenth

			Sequel	2 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	
2. Main references (sources)	
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of materials
B- Electronic references, websites	Engineering Materials Websites

13 . Acceptance	
Prerequisites	1. Classroom. 2. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	24
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications	

Course Description Form

Course Description :Mathematics 1

Introducing the student to the use of mathematics1 in other scientific topics and increasing his ability to think logically when solving exercises, as well as increasing his ability to develop and how to link data with his information to obtain a problem solution.

Educational institution	Northern Technical University – Mosul Technical Institute
Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
Course Name/Code	Mathematics 11) Mathematics)
Teaching Name	Ghada Yousef Ismail
Available Attendance Forms	My presence (2 theoretical hours)
Semester / Year	2024-2025
Number of Credit Hours (Total)	60 hours
The history of preparation of this description	2-2-2025
1. Course Objectives	
1. Clarify the basics of mathematics and mathematical laws. 2. Knowledge of linking theoretical topics with applied topics. 3. Teaching students the derivation of all types of mathematical functions and integration as well.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1. The student is introduced to the basic concepts in mathematics.	

2. Expanding students' perceptions and promoting concepts of mathematics and its importance in life as it enters into all kinds of sciences

B - Skills objectives of the course.

1. A detailed study of mathematics concepts.
2. A detailed study of the laws of mathematics that include the above course.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Asking the student to solve arithmetic problems and solve in different ways to gain skill in the methods of calculating mathematical laws.
4. Asking the student to bring assignments for each topic in the lecture.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.
2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
3.

Evaluation methods

The evaluation is carried out on the basis of:

1. Semester exam (theoretical).
2. The work of the year takes into account daily tests, assignments, attendance and assignments.
3. Final exam (theoretical).

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

1. Graduating qualified people who possess scientific logical thinking and scientific research skills in mathematics.
2. Enabling students with mathematics and its applications.
3. Develop the student's ability to analyze information and interpret the data obtained through calculations.

11. Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Determinants and their properties, solving equations by the determinant method (Kramer)	Student comprehension of the subject	2 hours	First
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Second
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Differentiation, algebra of derivatives, multiple functions	Student comprehension of the subject	2 hours	Third
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fourth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	fifth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Trigonometric, logarithmic, exponential functions and their derivatives and implicit functions, the chain rule.	Student comprehension of the subject	2 hours	Sixth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Drawing functions, drawing a trigonometric function and maximum and minimum limits.	Student comprehension of the subject	2 hours	Ninth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Tenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Eleventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Applications of physical differentiation, speed and acceleration and applications of engineering differentiation.	Student comprehension of the subject	2hr	Twelfth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Thirteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Integral, laws, and its relationship to differentiation, definite and indefinite integration	Student comprehension of the subject	2 hours	Fourteenth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	Mathematics for codification: written by Professor Obaid Mahmoud Al-Zobaie and Professor Adnan Salem Al-Saffar
2. Main references (sources)	Calculus: by Frank Ayers Jr. and Eliot Mendelssohn
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals related to mathematics
B- Electronic references, websites	Math websites

13 . Acceptance	
Prerequisites	1. Classroom. 2. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	30
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications	

Course Description Form

Course Description :Calculus

Introducing the student to the use of mathematics2 in other scientific topics and increasing his ability to think logically when solving exercises, as well as increasing his ability to develop and how to link data with his information to obtain a problem solution.

1. **Educational institution**	Northern Technical University – Mosul Technical Institute
2. **Scientific Department / Center**	Department of Mechanical Techniques – Metal Production Branch
3. **Course Name/Code**	calculus) calculus)
4. **Teaching Name**	Ghada Yousef Ismail
5. **Available Attendance Forms**	My presence (2 theoretical hours)
6. **Semester / Year**	2024-2025
7. **Number of Credit Hours (Total)**	30 hours
8. **The history of preparation of this description**	2-2-2025
9. Course Objectives	
1. Clarify the basics of mathematics and mathematical laws. 2. Knowledge of linking theoretical topics with applied topics. 3. Teaching students the derivation of all types of mathematical functions and integration as well.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	

A- Cognitive objectives

1. The student is introduced to the basic concepts in mathematics.
2. Expanding students' perceptions and promoting concepts of mathematics and its importance in life as it enters into all kinds of sciences

B - Skills objectives of the course.

1. A detailed study of mathematics concepts.
2. A detailed study of the laws of mathematics that include the above course.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Asking the student to solve arithmetic problems and solve in different ways to gain skill in the methods of calculating mathematical laws.
4. Asking the student to bring assignments for each topic in the lecture.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.
2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
3.

Evaluation methods

The evaluation is carried out on the basis of:

1. Semester exam (theoretical).
2. The work of the year takes into account daily tests, assignments, attendance and assignments.
3. Final exam (theoretical).

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

1. Graduating qualified people who possess scientific logical thinking and scientific research skills in mathematics.
2. Enabling students with mathematics and its applications.
3. Develop the student's ability to analyze information and interpret the data obtained through calculations.

12. Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation	Implicit integration, geometric (areas and volumes) and physical integration applications	Student comprehension of the experience	2 hours	First
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Second
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Third
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Fourth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation	General methods of substitution and partial integration and the use of exponential and logarithmic partial fractions	Student comprehension of the experience	2 hours	Fifth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Sixth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Seventh
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation	Discrete, homogeneous and linear differential equations with their different applications	Student comprehension of the experience	2 hours	Eighth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Ninth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Tenth

Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Eleventh
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation	vectors (vector and quantum multiplication and calculation of angles between vectors).	Student comprehension of the experience	2 hours	Twelfth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Thirteenth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation	Statistics (principles) and probability theory	Student comprehension of the experience	2 hours	Fourteenth
Explanation of the topic, discussion, solving problems	Practical experience and use of the screen and explanation		Student comprehension of the experience	2 hours	Fifteenth

12. Infrastructure	
1. Required text books	Mathematics for codification: written by Professor Obaid Mahmoud Al-Zobaie and Professor Adnan Salem Al-Saffar
2. Main references (sources)	Calculus: by Frank Ayers Jr. and Eliot Mendelssohn
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals related to mathematics
B-Electronic references, websites	Math websites

13 . Acceptance	
Prerequisites	1. Classroom. 2. Blackboard and accessories. 3. Data show.

Minimum number of students	8
Maximum number of students	30
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications	

Course Description Form

Course Description :Electrical Technology

The student studies the basics of electricity technology and various electric motors, their theory of operation, methods of operation, how to repair electrical faults and maintain them, and how to deal with electrical elements and laboratory devices for laboratory experiments.

1. **Educational institution**	Northern Technical University – Mosul Technical Institute
2. **Scientific Department / Center**	Department of Mechanical Techniques – Metal Production Branch
3. **Course Name/Code**	Electrical Technology
4. **Name of Teaching / Technicians**	M. Assistant : Ghada Youssef Ismail Technical Trainer : Waad Mohamed Mahmoud
5. **Available Attendance Forms**	Attendance (1 hour theoretical + 2 hours practical - an average of 3 hours per week)
6. **Semester / Year**	2024-2025
7. **Number of Credit Hours (Total)**	45 hours
8. **The history of preparation of this description**	2-2-2025
9. Course Objectives	

1. Clarify the basics of electricity and electrical symbols.
2. Knowledge of connecting parts and electric motors.
3. How to perform calculations to calculate current, voltages, resistance and power.
4. Teaching students how to deal with various electrical elements and laboratory equipment correctly and according to their danger, taking into account occupational safety.
5. Developing students' skills through mental questions, answers and special tests in the laboratory and linking them theoretically with theoretical topics.
6. Developing students' skills in the field of electricity related to mechanical devices and machines.

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1- The student is introduced to the basic concepts of electricity.
2- Expanding students' perceptions, enhancing their concept, and linking electricity and mechanical machines.
3- The student knows how to measure and connect electrical circuits.

B - Skills objectives of the course.

1. Detailed study of connecting electrical circuits.
2. A detailed study of how Ohm's law of electrical circuits is calculated.
3. Explain the importance of practical experiments for students in the electrical technology laboratory with conducting these experiments themselves and the importance of this in their scientific and practical career.
4. Preparing students to be technicians with experience in connecting electrical circuits, how to calculate them, connect them to mechanical machines and how to operate them.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Asking the student to solve arithmetic problems and solve in different ways to gain skill in the methods of calculating electrical circuits.
4. Require the student to bring reports for each practical experiment in the laboratory.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.

3. Quarterly and final exams.
C. Emotional and value goals 1. Teach the student order and hygiene. 2. Teaching patience and prolongation. 3. Acquire the quality of good character and good dealing with auditors.
Teaching and learning methods
1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student. 2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics. 3. Providing students with practical skills by conducting experiments on electrical appliances inside the laboratory and viewing electrical equipment outside it.
Evaluation methods
The evaluation is carried out on the basis of: 1- Semester exam (theoretical + practical). 2- The work of the year takes into account daily tests, assignments, attendance and reports on experiments. 3- Final exam (theoretical + practical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in the calculations of electrical circuits. 2. Enabling students to master electricity technology theoretically, computationally and practically. 3. Develop the student's ability to analyze information and interpret the data obtained by performing practical electrical circuit calculations and calculating them theoretically as well.

12. Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Fundamental of Electricity Electrical Units and Symbols, Ohm Law, Electrical Circuits and Examples	Student comprehension of the subject	1 hour	First

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Second
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Third
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Fourth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Fifth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Alternating Current AC Current, Sine Wave and Examples	Student comprehension of the subject	1 hour	Sixth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Three Phase System Three Phase Generator, Delta, Star and Examples.	Student comprehension of the subject	1 hour	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Ninth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Electromagnetics Magnetic Materials, Permanent Magnet, Magnetic Flux, Flux Density, Electromagnetic Induction and Examples.	Student comprehension of the subject	1 hour	Tenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Eleventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Twelfth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	The Transformer and AC Machines The Transformer, Step-Up / Step-Down Transformer, AC Machines, Three Phase Induction Motor and Examples.	Student comprehension of the subject	1 hour	Thirteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Fourteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	1 hour	Fifteenth

13. Course Structure (Practical)					
Evaluation method	**Method of education**	**Unit / Subject Name**	**Required Learning Outcomes**	**Hours**	**The week**
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Identify the laboratory, power sources, electrical appliances.	Student comprehension of the experience	2 hours	First
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Study of the AFO device and how to use it to measure electric current and potential difference and resistance.	Student comprehension of the experience	2 hours	Second
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Recognize the terminology of the color resistance system.	Student comprehension of the experience	2 hours	Third
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Realization of Ohm's law in practice.	Student comprehension of the experience	2 hours	Fourth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Connecting resistors in series and parallel in the electrical circuit and finding equivalent resistance for measurement.	Student comprehension of the experience	2 hours	Fifth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Different electrical circuits (sequential, parallel) and the study of their properties, finding the equivalent resistance.	Student comprehension of the experience	2 hours	Sixth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Study the effect of overheating on resistance.	Student comprehension of the experience	2 hours	Seventh

Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Set the value of different specific resistance, types of conductive materials.	Student comprehension of the experience	2 hours	Eighth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Measurement of electrical power from DC circuits.	Student comprehension of the experience	2 hours	Ninth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Measurement of power in three-sided alternating current circuits.	Student comprehension of the experience	2 hours	Tenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	The use of electric caustic and training in welding methods and the work of electrical connections.	Student comprehension of the experience	2 hours	Eleventh
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Training on the establishment of electrician and the work of exercises to establish a light bulb and a switch in Simple circuit.	Student comprehension of the experience	2 hours	Twelfth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Make a check and operate panel containing a socket and a succession lamp, a parallel socket and a sink.	Student comprehension of the experience	2 hours	Thirteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Establish a lamp in two ways.	Student comprehension of the experience	2 hours	Fourteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and legend	Examine the three-sided impact motor and identify its parts, disassemble them and prepare their installation.	Student comprehension of the experience	2 hours	Fifteenth

12. Infrastructure	
1. Required text books	1. Theraga. 2. Hughes. 3. Erick Singer.
2. Main references (sources)	1. Electrical Technology by – Theraga 2. Electrical Technology by – Hughes 3. Electrical Technology by – Erick Singer
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Electrical Technology Websites

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory. 3. Laboratory electrical devices. 4. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
Keeping pace with the development and introduction of computers and its applications in electrical circuits and modern electrical appliances	

Course Description Form

Course Description: Engineering Drawing

The student studies the foundations of engineering drawing, sometimes called mechanical drawing or machine drawing, but it is an artistic, engineering and industrial language. Like any language, it is used to understand and transfer industrial and engineering ideas between people, whether it is through writing (preparing drawings) or by reading (studying drawings that have already been prepared).

1. **Educational institution**	Northern Technical University – Mosul Technical Institute
2. **Scientific Department / Center**	Department of Mechanical Techniques – Metal Production Branch
3. **Course Name/Code**	Engineering Drawing 1
4. **Name of Teaching / Technicians**	Lecturer Assistant : Waleed Mohammed Najm
5. **Available Attendance Forms**	My attendance (3 working hours)
6. **Semester / Year**	2024-2025
7. **Number of Credit Hours (Total)**	45 hours
8. **The history of preparation of this description**	2-2-2025
9. Course Objectives	
Upon completion of this training module, the trainee has: 1- Active/Review the necessary basics of the engineering drawing language. 2- Normative systems regulating engineering and technical drawing operations. 3- Types of drawing lines.	

4- Drawing projections of the perspective or stereoscopic shape.

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1. The student is introduced to the basic concepts of engineering drawing.
2. Expanding students' perceptions, enhancing their concept, and linking engineering drawing with mechanical machines.
3. The student's knowledge of how to draw and use the computer

B - Skills objectives of the course.

1. Detailed study of engineering drawing.
2. A detailed study of the AutoCAD program and how to harness the program in integrating fees.
3. Preparing students to be technicians with experience in engineering drawing, how to analyze drawings, link them to mechanical machines and how to operate them.

Teaching and learning methods

1. Providing students with the basics and topics related to the previous learning outcomes of skills to solve practical problems through recitation, lecture or drawing different geometric shapes.
2. Draw a set of different exercises applied by the subject teacher.
3. Asking the student to draw exercises of different shapes and models to gain skill in the methods of learning engineering drawing.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student the system.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.
2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.

3. Providing students with practical skills by drawing exercises of geometric shapes, isometric perspective and models inside the laboratory.
Evaluation methods
The evaluation is carried out on the basis of: 1. Semester exam (practical). 2. The work of the year takes into account daily tests, assignments and attendance. 3. Final exam (practical).

13. Course Structure (Practical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	The importance of engineering drawing, the importance of using the computer to implement the engineering drawing, the sizes of standard drawing boards, an overview of the AutoCAD program. Title Block	Student comprehension of the subject	3 hours	First
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the subject	3 hours	Second
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the subject	3 hours	Third
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Drawing geometric shapes using the computer.	Student comprehension of the subject	3 hours	Fourth
Topic Explanation, Discussion,	Use the screen and explanation		Student comprehension of the subject	3 hours	Fifth

Daily Exam Exercise Drawing					
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Drawing geometric shapes using the computer.	Student comprehension of the subject	3 hours	Sixth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the subject	3 hours	Seventh
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Graphic adjustments, computer aids.	Student comprehension of the subject	3 hours	Eighth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the subject	3 hours	Ninth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Types of lines for engineering drawing, engineering operations .	Student comprehension of the subject	3 hours	Tenth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the subject	3 hours	Eleventh
Topic Explanation, Discussion,	Use the screen and explanation		Student comprehension of the subject	3 hours	Twelfth

Daily Exam Exercise Drawing					
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and legend	Various advanced exercises in geometric shapes (engineering operations)	Student comprehension of the subject	3 hours	Thirteenth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and legend		Student comprehension of the subject	3 hours	Fourteenth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and legend		Student comprehension of the subject	3 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**1- "Fundamental of engineering drawing", Feench and Vierck.2- "Engineering drawing", S. Bogolyubove N. Voinov**
2. Main references (sources) Arabic	**-1 Engineering Drawing", Abdul Rasoul Al-Khafaf** **"-2Engineering Drawing Technology", Fapert & Vander**
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Engineering drawing website

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory. 3. Computers are laboratory. 4. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications in engineering drawing	

Course Description Form

Course Description: Mechanical Drawing

The student studies the foundations of engineering drawing2 (sometimes called mechanical drawing or machine drawing), but it is an artistic, engineering and industrial language. Like any language, it is used to understand and transmit industrial and engineering ideas between people, whether it is through writing (preparing drawings) or by reading (studying drawings that have already been prepared).

1. **Educational institution**	Northern Technical University – Mosul Technical Institute
2. **Scientific Department / Center**	Department of Mechanical Techniques – Metal Production Branch
3. **Course Name/Code**	Mechanical drawing
4. **Name of Teaching / Technicians**	Lecturer Assistant : Waleed Mohammed Najm
5. **Available Attendance Forms**	My attendance (3 working hours per week)
6. **Semester / Year**	2024-2025
7. **Number of Credit Hours (Total)**	45 hours
8. **The history of preparation of this description**	2-2-2025
9. Course Objectives	
Upon completion of this training module, the trainee has: 1- Active/Review the necessary basics of the engineering drawing language. 2- Normative systems regulating engineering and technical drawing operations. 3- Drawing projections of the perspective or stereoscopic shape.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives .	

1. Expanding students' perceptions, enhancing their concept, and linking engineering drawing with mechanical machines.
2. The student knows how to draw three-dimensional shapes

B - Skills objectives of the course.

1. Detailed study of engineering drawing.
2. A detailed study of the AutoCAD program and how to harness the program in integrating fees.
3. Preparing students to be technicians with experience in engineering drawing, how to analyze drawings, link them to mechanical machines and how to operate them.

Teaching and learning methods

1. Providing students with the basics and topics related to the previous learning outcomes of skills to solve practical problems through recitation, lecture or drawing different geometric shapes.
2. Draw a set of different exercises applied by the subject teacher.
3. Asking the student to draw exercises of different shapes and models to gain skill in the methods of learning engineering drawing.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student the system.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
3. Providing students with practical skills by drawing exercises of geometric shapes, isometric perspective and models inside the laboratory.

Evaluation methods

The evaluation is carried out on the basis of:

1. Semester exam (practical). 2. The work of the year takes into account daily tests, assignments and attendance. 3. Final exam (practical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in engineering drawing. 2. Enabling students to study engineering drawing theoretically and practically.

14. Course Structure (Practical)					
Evaluation method	**Method of education**	**Unit / Subject Name**	**Required Learning Outcomes**	**Hours**	**The week**
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Draw perspective.	Student comprehension of the experience	3 hours	First
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Second
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Third
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Draw a perspective that contains a circle represented by an oval.	Student comprehension of the experience	3 hours	Fourth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Fifth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Projection theory	Student comprehension of the experience	3 hours	Sixth

Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Drawing simplified projections.	Student comprehension of the experience	3 hours	Seventh
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Eighth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Main projections - even angles - drawing according to the theory of the first even projection angle	Student comprehension of the experience	3 hours	Ninth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Tenth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Conclusion of the third projection of the projection. Deduce perspective from two or three projections.	Student comprehension of the experience	3 hours	Eleventh
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Twelfth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Thirteenth

Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation	Cutting theory, cutting shapes and lines according to the type of material, drawing cut projections. Draw projections cut from a given single projection.	Student comprehension of the experience	3 hours	Fourteenth
Topic Explanation, Discussion, Daily Exam Exercise Drawing	Use the screen and explanation		Student comprehension of the experience	3 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**1- "Fundamental of engineering drawing", Feench and Vierck.2- "Engineering drawing", S. Bogolyubove N. Voinov**
2. Main references (sources) Arabic	**-1 Engineering Drawing", Abdul Rasoul Al-Khafaf** **"-2Engineering Drawing Technology", Fapert & Vander**
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B-Electronic references, websites	Engineering drawing website

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory. 3. Computers are laboratory. 4. Blackboard and accessories. 5. Data show.
Minimum number of students	8

Maximum number of students	16
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications in engineering drawing	

Course Description Form

Course Description: Computer

Course Objective: Introduce the student to the calculator with an idea of its prospects and use in different fields and the principles of programming and give him a skill in using the calculator to implement programs prepared previously for application in his field of specialization.

This course description provides a requisite brevity that inspired the course characteristics and the learning outcomes expected of the student to achieve, proving whether

Make the most of the learning opportunities available. It must be linked to the program description.

1. **Educational institution**	Northern Technical University – Mosul Technical Institute
2. **Scientific Department / Center**	Department of Mechanical Techniques – Metal Production Branch
3. **Course Name/Code**	Computer
4. **Name of Teaching / Technicians**	Lecturer Assistant : Waleed Mohammed Najm
5. **Available Attendance Forms**	My attendance (1 theoretical hour + 2 practical hours - an average of 3 hours per week)

6. **Semester / Year**	2024-2025
7. **Number of Credit Hours (Total)**	45 hours
8. **The history of preparation of this description**	2-2-2025

9. Course Objectives

Upon completion of this training module, the trainee has:

Learn the principles of calculator and give him skill in using calculator and its applications

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1-Make the student able to know and understand the basics of the computer
2- Make the student able to know and understand the basics of programming through the use of modern software and keep pace with scientific development.
3- Enable the student to obtain knowledge and understanding in the use of calculator and task programs

B - Skills objectives of the course.

1. Scientific skills
2. Usage and development skills
3. Thinking and analysis skills
4. Skills of the ability to apply the theoretical and practical experience gained from his studies in the areas of practical life, taking into account the limitations in the field of application.

Teaching and learning methods

1. Providing students with the basics and topics related to the previous learning outcomes of skills to solve practical problems through recitation, lecture or drawing different geometric shapes.
2. Draw a set of different exercises applied by the subject teacher.
3. Asking the student to draw exercises of different shapes and models to gain skill in using the computer.

Evaluation methods
1. Daily interaction and topic preparation. 2. Daily and weekly tests. 3. Quarterly and final exams.
C. Emotional and value goals
1. Teaching the student the system. 2. Teaching patience and prolongation. 3. Acquire the quality of good character and good dealing with auditors.
Teaching and learning methods
1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student. 2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
Evaluation methods
The evaluation is carried out on the basis of: 1. Semester exam (practical). 2. The work of the year takes into account daily tests, assignments and attendance. 3. Final exam (practical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Guiding the student and developing the desire to identify the importance of using the computer in different fields 2. 2- Guiding the student and developing the desire to learn about solving equations by programming them using the computer

14. Course Structure (Theoretical + Practical) Computer					
Evaluation method	**Method of education**	**Unit / Subject Name**	**Required Learning Outcomes**	**Hours**	**The week**
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Introducing the student to the computer, its basics, generations, components, importance, uses.	Student comprehension of the subject	3 hours	First

Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Computer hardware and software components	Student comprehension of the subject	3 hours	Second
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Windows operating system features and basic requirements System components	Student comprehension of the subject	3 hours	Third
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Start Menu	Student comprehension of the subject	3 hours	Fourth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Task Bar	Student comprehension of the subject	3 hours	Fifth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Sixth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Control Panel	Student comprehension of the subject	3 hours	Seventh
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Eighth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Shortcuts in Windows	Student comprehension of the subject	3 hours	Ninth

Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Take advantage of additional programs (Accessories)	Student comprehension of the subject	3 hours	Tenth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Internet	Student comprehension of the subject	3 hours	Eleventh
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Twelfth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Internet Search Sites	Student comprehension of the subject	3 hours	Thirteenth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Fourteenth
Explanation of the topic, discussion, solving problems	Practical lecture and the use of the screen and the means of explanation	Learn how to get help and its different methods	Student comprehension of the subject	3 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	
2. Main references (sources) Arabic	

A-Recommended books and references (scientific journals, reports ,....)	Laboratory binding ... All sober scientific journals that have to do with the broad concept
B- Electronic references, websites	Computer Websites

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory. 3. Computers are laboratory. 4. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
The increasing use of information technology or Internet references, and changes in content as a result of keeping pace with the great development in the world of technology and information	

Course Description:

Course Objective: Introduce the student to the calculator with an idea of its prospects and use in different fields and the principles of programming and give him a skill in using the calculator to implement programs prepared previously for application in his field of specialization.

This course description provides a requisite brevity that inspired the course characteristics and the learning outcomes expected of the student to achieve, proving whether

Make the most of the learning opportunities available. It must be linked to the program description.

1. **Educational institution**	Northern Technical University – Mosul Technical Institute
2. **Scientific Department / Center**	Department of Mechanical Techniques – Metal Production Branch
3. **Course Name/Code**	Computer Principles 2
4. **Name of Teaching / Technicians**	Lecturer Assistant: Waleed Mohammed Najm Engineer: Kamiran Mohamed Khalil
5. **Available Attendance Forms**	My attendance (1 theoretical hour + 2 practical hours - an average of 3 hours per week)
6. **Semester / Year**	2024-2025
7. **Number of Credit Hours (Total)**	45 hours
8. **The history of preparation of this description**	2-2-2025
9. Course Objectives	
Upon completion of this training module, the trainee has: Learn the principles of calculator and give him skill in using calculator and its applications	

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1. Make the student able to know and understand the basics of the computer.
2. Make the student able to know and understand the basics of programming through the use of modern software and keep pace with scientific development.
3. Enable the student to obtain knowledge and understanding in the use of calculator and task programs.

B - Skills objectives of the course.

1- Scientific skills
2 – Skills of use and development
3 - Thinking and analysis skills
- 4 Skills of the ability to apply the theoretical and practical experience gained from his studies in the fields of practical life, taking into account the limitations in the field of application.

Teaching and learning methods

1. Providing students with the basics and topics related to the previous learning outcomes of skills to solve practical problems through recitation, lecture or drawing different geometric shapes.
2. Draw a set of different exercises applied by the subject teacher.
3. Asking the student to draw exercises of different shapes and models to gain skill in using the computer.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student the system.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.

2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.

Evaluation methods

The evaluation is carried out on the basis of:
1. Semester exam (practical).
2. The work of the year takes into account daily tests, assignments and attendance.
3. Final exam (practical).

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

1. Guiding the student and developing the desire to identify the importance of using the computer in different fields
2. 2- Guiding the student and developing the desire to learn about solving equations by programming them using the computer

15. Course structure (theoretical + practical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Using Word + Word Program Interface	Student comprehension of the subject	3 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Page layout and sheet size selection	Student comprehension of the subject	3 hours	Second
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Basic commands in Word	Student comprehension of the subject	3 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Professional commands in Word	Student comprehension of the subject	3 hours	Fourth

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Save files and print	Student comprehension of the subject	3 hours	Fifth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Power Point + Power Point interface	Student comprehension of the subject	3 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Basic commands in Power Point	Student comprehension of the subject	3 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Power Point Professional Commands	Student comprehension of the subject	3 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Tenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Excel + Excel interface	Student comprehension of the subject	3 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Basic commands in Excel	Student comprehension of the subject	3 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Writing equations in Excel system	Student comprehension of the subject	3 hours	Thirteenth

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Computer Security and Software Licenses	Student comprehension of the subject	3 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Sequel	Student comprehension of the subject	3 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	
2. Main references (sources) Arabic	
A-Recommended books and references (scientific journals, reports ,....)	Laboratory binding ... All sober scientific journals that have to do with the broad concept
B- Electronic references, websites	Computer Websites

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory. 3. Computers are laboratory. 4. Blackboard and accessories. 5. Data show.
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
The increasing use of information technology or Internet references, and changes in content as a result of keeping pace with the great development in the world of technology and information	

Course Description Form

Course Description: English Language1

The student studies the basic principles of the English language in terms of using expressions that help him in daily life and how to benefit from them, in addition to the basic rules on which the English language is built in order to prevent errors during reading and writing.

Northern Technical University – Mosul Technical Institute	**1. Educational institution**
Department of Mechanical Techniques – Metal Production Branch	**2. Scientific Department / Center**
English Language NTU101	**3. Course Name/Code**
Ashraf Abdul Razzaq Saeed Al-hasso	**4. Name of Teaching / Technicians**
My attendance (2 theoretical hours per week)	**5. Available Attendance Forms**
2024-2025	**6. Semester / Year**
30 hours	**7. Number of Credit Hours (Total)**
2-2-2025	**8. The history of preparation of this description**
9. Course Objectives	
1. The students should be able to recognize the English language in an advanced way and enable to communicate in a simple way. 2. Learn about modern methods of learning English. 3. Develop the student's speaking and comprehension skills through conversations between students during the lecture. 4. Develop the student's ability to understand terms and how to use them.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1- Introduce the student to the basic principles of the English language.	

2- Expand students' perceptions and enhance their understanding of the different words and expressions used.
3- The student knows how to read and write correctly.

B - Skills objectives of the course.

1. A detailed study by developing students' skills for reading, speaking and solving exercises.
2. A detailed study of how different tenses and their rules are formulated.
3. Clarify the meanings of vocabulary and how to use it according to contexts.
4. Preparing students to be able to read various texts, especially scientific ones.

Teaching and learning methods

1. Providing students with the basics and related topics to serve the student's scientific career through recitation, lecture or experiments.
2. Solve and illustrate examples by the subject teacher.
3. Involve the student in solving questions with questions directed by the teacher to determine the extent of the student's understanding and comprehension.
4. Give the student homework to solve, read and discuss during the next lecture.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good manners and good dealing with others.

Teaching and learning methods

1. Using the data show in the presentation of the material to attract the student's attention through pictures to deliver the material better.
2. Conducting seminars by asking questions (how, what, when, where, does) for different topics.
3. Providing students with practical skills by solving various questions and providing them with the necessary skills to understand solving methods.

Evaluation methods

The evaluation is carried out on the basis of:
1- Semester exam (theoretical).
2- The work of the year takes into account daily tests, assignments, attendance and participation during the lecture.
3- Final exam (theoretical).

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

1. Developing speaking skills.
2. Enabling students to master the English language.
3. Developing the student's ability to read and write by applying everything that was discussed during the lectures throughout the course.

15. Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	General introduction to language and its basics	Student comprehension of the subject	2 hours	First
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Second
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Third
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Fourth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Fifth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Parts of speech	Student comprehension of the subject	2 hours	Sixth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Types of English sentences	Student comprehension of the subject	2 hours	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Ninth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Present, past, progressive, and future tenses	Student comprehension of the subject	2 hours	Tenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Eleventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Twelfth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Reading paragraphs (Writing laboratory reports)	Student comprehension of the subject	2 hours	Thirteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	(Metals and non metals) (Mechanical properties of materials)	Student comprehension of the subject	2 hours	Fourteenth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Parts of the house and furniture	Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
Dictionary	**2. Main references (sources)**
Scientific journals and books related to language and its uses	**A-Recommended books and references (scientific journals, reports ,....)**
English, conversation and grammar websites.	**B- Electronic references, websites ....**

13 . Acceptance	
1. Classroom. 2. Voice Lab. 3. White board and accessories. 4. Data show.	**Prerequisites**
8	**Minimum number of students**
44	**Maximum number of students**
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the sound laboratories that allow the student to identify a way to pronounce properly and the correct and varied use of vocabulary in the English language	

Second stage

Course Description Form

Course Description: Machine Parts Technology (1)

The student understands the parts of the machines and how to perform the design calculations of each part when a collapse occurs due to external forces or structure through the stresses that form in that part.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Machine Part - 1
4.Name of Teaching Person(s)	Prof. Dr. Emad Touma Bani
5.Available Attendance Forms	Attendance (three hours per week)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	30 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Explain the role of mechanical parts in the machine system, 2. The relationship that binds these parts together, 3. How to make some calculations to design these parts and identify all the factors affecting them.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1- Recognize the basic concepts of machine parts. 2- Expand students' perceptions and enhance the concept of design by giving them principles and design calculations.	

3- Give the student experience in fees for different machine parts.

B - Skills objectives of the course.

1. A detailed study of the engineering design of the machine parts.
2. Study the mathematical details that the student needs during the redesign of the machine part.
3. Prepare the technologist to be a successful technician by learning the correct principles of the mechanical techniques specialization of the production branch.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Through discussion, students are involved by solving some practical problems.
4. Asking the student to visit the library and the international information network (Internet) to obtain additional knowledge of the study materials and to observe, maintain and repair the machines in the machinery workshop at the Institute.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student order and cleanliness
2. Teaching patience and stretching
3. Acquire the quality of good manners and good dealing with auditors

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.
2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways.
3. Interrogate the students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.

4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new. 5. Providing students with practical skills by reviewing the machines inside and outside the institute.
Evaluation methods
The evaluation is carried out on the basis of: 1- First semester exam (theoretical). 2- The work of the year takes into account daily tests, duties, attendance and participation. 3- Final exam (theoretical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in measurements 2. Developing the skill of cooperation and the alternative system 3. - Enabling students to subject the technology of machine parts in its applied and cognitive aspects. 4. - Develop the student's ability to analyze information and interpret the data obtained through calculations. 5. - Enable the student to conduct a field survey to identify and solve problems on the ground.

12. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Review of Strength of Materials.	Student comprehension of the subject	2 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Riveted Joints. Types of Riveted Joints, Design of Riveted Joints, Efficiency of Riveted Joints	Student comprehension of the subject	2 hours	Second
Discussion, Quick Exam, Problem	Theoretical lecture and the use of the screen and the		Student comprehension of the subject	2 hours	Third

Solving, Homework	means of explanation				
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Welded Joints Types of welding Joints, Design of welding Joints	Student comprehension of the subject	2 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fifth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Screwed Joints, Design of Bolts for Fastening, Design of Bolts for Power Transition	Student comprehension of the subject	2 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Keyed Joints, Types of Key , Design of Sunk Key	Student comprehension of the subject	2 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Frictional Clutches, Type of Frictional Clutches, Design of Frictional Clutches.	Student comprehension of the subject	2 hours	Tenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Types of Springs , Design of Springs.	Student comprehension of the subject	2 hours	Twelfth

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Thirteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Types of Belts , Design of Belts	Student comprehension of the subject	2 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**Machinery Parts Book**
2. Main references (sources)	3. Strength of Material by Ferdinal L . Singer 4. Strength of Materials by R.S.Khurmi. 5. Machine Design by R.S. Khurmi, J.K. Gupta 6. Machine Design by Paul H.Black . Schaums Outline Series of Machine Design by Hall , Holowenko , Laughin
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Machinery Parts Website

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show

Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the design	

Course Description Form

Course Description: Machine Parts Technology (2)

The student understands the parts of the machines and how to perform the design calculations of each part when a collapse occurs due to external forces or structure through the stresses that form in that part.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Machine Part - 2
4.Name of Teaching Person(s)	Prof. Emad Touma Bani
5.Available Attendance Forms	My attendance is 2 hours a week
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	30 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Explain the role of mechanical parts in the machine system,	

2. The relationship that binds these parts together,
3. How to make some calculations to design these parts and identify all the factors affecting them.

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1- Recognize the basic concepts of machine parts.
2- Expand students' perceptions and enhance the concept of design by giving them principles and design calculations.
3- Give the student experience in fees for different machine parts.

B - Skills objectives of the course.

1. A detailed study of the engineering design of the machine parts.
2. Study the mathematical details that the student needs during the redesign of the machine part.
3. Prepare the technologist to be a successful technician by learning the correct principles of the mechanical techniques specialization of the production branch.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Through discussion, students are involved by solving some practical problems.
4. Asking the student to visit the library and the international information network (Internet) to obtain additional knowledge of the study materials and to observe, maintain and repair the machines in the machinery workshop at the Institute.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student order and cleanliness
2. Teaching patience and stretching
3. Acquire the quality of good manners and good dealing with auditors

Teaching and learning methods
1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student. 2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways. 3. Interrogate the students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics. 4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new. 5. Providing students with practical skills by reviewing the machines inside and outside the institute.
Evaluation methods
The evaluation is carried out on the basis of: 1- First semester exam (theoretical). 2- The work of the year takes into account daily tests, duties, attendance and participation. 3- Final exam (theoretical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in measurements 2. Developing the skill of cooperation and the alternative system 3. - Enabling students to subject the technology of machine parts in its applied and cognitive aspects. 4. - Develop the student's ability to analyze information and interpret the data obtained through calculations. 5. - Enable the student to conduct a field survey to identify and solve problems on the ground.

13. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem	Theoretical lecture and the use of the screen and the	Design of Shafts.	Student comprehension of the subject	2 hours	First

Solving, Homework	means of explanation				
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Second
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Design of Journal Bearings.	Student comprehension of the subject	2 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Selection of Ball Bearings.	Student comprehension of the subject	2 hours	Fifth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Design of Gears by Lewis Equation.	Student comprehension of the subject	2 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Gears Trains.	Student comprehension of the subject	2 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the	Design of Simple Gears Box.	Student comprehension of the subject	2 hours	Tenth

	means of explanation				
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Worm Gears.	Student comprehension of the subject	2 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Thirteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Cams.	Student comprehension of the subject	2 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**Machinery Parts Book**
2. Main references (sources)	1. Machine Design by R.S. Khurmi, J.K. Gupta 2. Machine Design by Paul H.Black . Schaums Outline Series of Machine Design by Hall , Holowenko , Laughin
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design

	Websites for machine parts and machine parts design.

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the design	

Course Description Form

Course Description: Metals 1

The student studies the basics of mineralogy, mechanical properties and microstructure, as well as the types and mechanisms of metal formation and the stress-strain curve.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Metals1 METP216
4.Name of Teaching Person(s)	Dr. Luqman Khalil Haidar
4.Available Attendance Forms	Attendance (an average of four hours per week)

5.Semester / Year	First 2024-2025
6.Number of Credit Hours (Total)	60 hours (30 hours theoretical + 30 hours practical)
7.The history of preparation of this description	2-2-2025

9. Course Objectives

1. explain the basic concepts of the crystal structure of metals,
2. Study the relationship between mechanical properties and microstructure
3. Study of the stress curve – emotion and mathematical calculations of it.

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1- Learn about the basic concepts of metallurgy.
2- Expanding students' perceptions and enhancing the concept of the crystal structure of metal and its associated mechanical properties.
3- Expand students' understanding of how to understand diagrams of mechanical properties.

B - Skills objectives of the course.

1. A detailed study of the types of stresses.
2. Study the mathematical details of stresses.
3. Successful technical preparation in understanding metals in several aspects, crystal structure, mechanical properties, stresses, microstructure.... Etc.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Through discussion, students are involved by solving some practical problems.
4. Require student to visit course websites

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student order and cleanliness
2. Teaching patience and stretching
3. Acquire the quality of good manners and good dealing with auditors

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways.
3. Interrogate the students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new.
5. Distributing students in groups and giving them questions to participate in solving and discussing them.

Evaluation methods

The evaluation is carried out on the basis of:

1- First semester exam (theoretical).
2- The work of the year takes into account daily tests, duties, attendance and participation.
3- Final exam (theoretical).

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

1. Developing the skill of accuracy in measurements
2. Developing the skill of cooperation and the alternative system
3. - Enabling students of metals 1 in its applied and cognitive aspects.
4. - Develop the student's ability to analyze information and interpret the data obtained through calculations.
5. - Enable the student to conduct preliminary tests of the metal and determine its type and mechanical properties.

14. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Definition of metallurgy, dendritic crystallization, the effect of cooling rate on metal structure	Student comprehension of the subject	4 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Installation of metal blocks, (freezing castings) common defects in castings Atomic overcrowding coefficient, crystalline trends, rooting phenomenon	Student comprehension of the subject	4 hours	Second
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Disadvantages of crystal lattice, raster, linear Flexible forming and plastic forming (slipping, twinning)	Student comprehension of the subject	4 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Fifth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Emotional Solidity, Cold Forming, Hot Forming Restoration, Recrystallization, Crystallization	Student comprehension of the subject	4 hours	Sixth

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Stress curves, strain in the bend, tide, fracture, types of fracture, roaming from ductile to brittle fracture Fatigue, Mechanism of Occurrence of Fatigue, Factors Affecting the Fatigue Limit, Materials Resistant to Fatigue	Student comprehension of the subject	4 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Creeping, creep occurrence mechanism, crawl-resistant materials Composite, phase, solid solution, system, equilibrium, alloy formation, mechanical mixture	Student comprehension of the subject	4 hours	Tenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Thermal equilibrium diagram of a fully dissolved binary system in the liquid and solid state, thermal equilibrium diagram of a dual fully dissolved system in the liquid and insoluble state in the solid state (eutectic) Thermal equilibrium diagram of a fully	Student comprehension of the subject	4 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the		Student comprehension of the subject	4 hours	Thirteenth

	means of explanation	soluble binary system in the liquid state and finite solubility in the solid state			
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Thermal equilibrium diagram of a fully dissolved system in the liquid state and forming a chemical compound at freezing	Student comprehension of the subject	4 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**Metallurgical Book**
2. Main references (sources)	1. R.A Higgins Engineering metallurgy part1 2. R.A Higgins Engineering metallurgy part2 3. Machine Design by R.S. Khurmi, J.K. Gupta Raymond A Higgins Engineering metallurgy part1
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Machinery Parts Website

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show
Minimum number of students	15
Maximum number of students	25
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the design	

Course Description Form

Course Description: Metals2

The student studies the thermal balance diagrams of binary alloy systems, as well as the iron-carbon diagram and heat treatment methods for carbon steel and cast iron.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Ma'aden2 METP217
4.Name of Teaching Person(s)	Dr. Luqman Khalil Haidar
5.Available Attendance Forms	Attendance (an average of four hours per week)
6.Semester / Year	Second 2024-2025
7.Number of Credit Hours (Total)	60 hours (30 hours theoretical + 30 hours practical)
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Explain the basic concepts of phase diagrams for binary alloys 2. Study the relationship between microstructure and mechanical properties 3. Study of heat treatment methods for carbon steel and cast iron	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1- Learn about the basic concepts of thermal equilibrium diagrams for binary alloys. 2- Expanding students' perceptions and enhancing the concept of microstructure and chemical composition.	

3- Expand students' understanding of how to understand diagrams of mechanical properties.

B - Skills objectives of the course.

1. A detailed study in the types of heat treatment.
2. A detailed study of how to read the charts and conclusions resulting from the scheme.
3. Successful technical preparation in understanding metals in several aspects, crystal structure, mechanical properties, microstructure, chemical composition.... Etc.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Through discussion, students are involved by solving some practical problems.
4. Require student to visit course websites

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student order and cleanliness
2. Teaching patience and stretching
3. Acquire the quality of good manners and good dealing with auditors

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways.
3. Interrogate the students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.

4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new. 5. Distributing students in groups and giving them questions to participate in solving and discussing them.
Evaluation methods
The evaluation is carried out on the basis of: 1- First semester exam (theoretical). 2- The work of the year takes into account daily tests, duties, attendance and participation. 3- Final exam (theoretical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in measurements 2. Developing the skill of cooperation and the alternative system 3. - Enabling students of metals 1 in its applied and cognitive aspects. 4. - Develop the student's ability to analyze information and interpret the data obtained through calculations. 5. - Enable the student to conduct preliminary tests of the metal and determine its type and mechanical properties.

15. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Iron , solubility of carbon in iron, thermal equilibrium diagram of an iron/carbon system, the most important reactions included in the diagram	Student comprehension of the subject	4 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Complement the thermal equilibrium diagram of the iron/carbon system. Austinite Composition , Perlite to Austinite Conversion Mechanism	Student comprehension of the subject	4 hours	Second

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Anointite transformations with degree stability and continuous cooling transformations Thermal coefficients (annealing, equation, tempering)	Student comprehension of the subject	4 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Fifth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Complement of thermal coefficients (tempering and revision) non-zero thermal coefficients, aging Surface hardening (carbonization of all kinds and the thermal coefficients that follow it) Nitrud, Sinda	Student comprehension of the subject	4 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Alloy steel, the effect of alloy elements on the properties of steel Stainless steel	Student comprehension of the subject	4 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the		Student comprehension of the subject	4 hours	Ninth

	means of explanation				
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Cast iron production and thermal coefficients Supplement the production of cast and the most important types	Student comprehension of the subject	4 hours	Tenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Definition of corrosion, direct and indirect economic costs of corrosion, manifestations of corrosion, mechanism of corrosion occurrence Negative, Faraday's law of general erosion, galvanic erosion, cavernous erosion	Student comprehension of the subject	4 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Thirteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Soil corrosion, Optional erosion, Intercrystalline corrosion, Stress corrosion	Student comprehension of the subject	4 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	4 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**Metallurgical Book**
2. Main references (sources)	1. R.A Higgins Engineering metallurgy part1 2. R.A Higgins Engineering metallurgy part2 3. Machine Design by R.S. Khurmi, J.K. Gupta Raymond A Higgins Engineering metallurgy part1
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Machinery Parts Website

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show
Minimum number of students	15
Maximum number of students	25
14. Course Development Plan	

Course Description Form

Course Description: Industrial Drawing 1

The student studies the foundations of industrial drawing 1 (Machine Drawing1) and is sometimes called mechanical drawing or machine drawing, but it is an artistic, engineering and industrial language. Like any language, it is used to understand and transfer industrial and engineering ideas between people, whether it is through writing (preparing drawings) or by reading (studying previously prepared drawings).

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Industrial Drawing 1 (Machine Drawing)
4.Name of Teaching / Technicians	Lecturer Assistant : Hassan Mahmoud Kidi
5.Available Attendance Forms	My attendance (1 theoretical hour + 2 practical hours - an average of 3 hours per week)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	45 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
Upon completion of this training module, the trainee has: 1- Active/Review the necessary basics of the engineering drawing language. 2- Normative systems regulating engineering and technical drawing operations. 3- Types of drawing lines.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	

A- Cognitive objectives

1. The student is introduced to the basic concepts of industrial drawing.
2. Expanding students' perceptions, enhancing their concept, and linking industrial drawing with mechanical machines.
3. The student's knowledge of how to draw and use the computer

B - Skills objectives of the course.

2. A detailed study of industrial drawing.
1. A detailed study of the AutoCAD program and how to harness the program in integrating fees.
2. Prepare students to be technicians with experience in industrial drawing, how to analyze drawings, relate them to mechanical machines, and how to operate them.

Teaching and learning methods

5. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
1. Solve a set of practical and practical examples by the subject teacher.
2. Asking the student to solve arithmetic problems and solve in different ways to gain skill in the methods of learning industrial drawing.
3. Require the student to bring reports for each painting drawn in the lab.

Evaluation methods

4. Daily interaction and topic preparation.
1. Daily and weekly tests.
2. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

4. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
1. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
2. Providing students with practical skills by conducting experiments on electrical appliances inside the laboratory and viewing electrical equipment outside it.

Evaluation methods

The evaluation is carried out on the basis of: 1. Semester exam (theoretical + practical). 2. The work of the year takes into account daily tests, assignments, attendance and reports on experiments. 3. Final exam (theoretical + practical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in industrial drawing. 2. Enabling students to master industrial drawing theoretically, arithmetically and practically. 3. Develop the student's ability to analyze information and interpret the data obtained by conducting practical industrial drawing calculations and calculating them theoretically as well.

16. Course structure (theoretical + practical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Fastening and fastening methods Learn about the use of tables and extract measurements for the spiral Drawing bolts and nuts of several types	Student comprehension of the experience	3 hours	First
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Second
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Third
Explanation of the topic, discussion,	Practical experience and use of the	Explanation and drawing of the Khabur	Student comprehension of the experience	3 hours	Fourth

practical experience	screen and explanation				
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Fifth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Explanation and drawing of the disc	Student comprehension of the experience	3 hours	Sixth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Explanation and drawing of the Manchurian Khabur	Student comprehension of the experience	3 hours	Seventh
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Eighth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Explanation and drawing of rivets and connecting boards	Student comprehension of the experience	3 hours	Ninth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Tenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Weld fastening Permanent bonding	Student comprehension of the experience	3 hours	Eleventh
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Twelfth

Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Thirteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	How to use welding codes	Student comprehension of the experience	3 hours	Fourteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation		Student comprehension of the experience	3 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**1- "Fundamental of engineering drawing", Feench and Vierck.2- "Engineering drawing", S. Bogolyubove N. Voinov3- "Basic Technical drawing", Spencer**
2. Main references (sources) Arabic	**1- Engineering Drawing", Abdul Rasoul Al-Khafaf** **2-Engineering Drawing Technology", Fapert & Vander**
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Industrial drawing website

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory.

	3. Computers are laboratory. 4. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications in industrial drawing	

Course Description Form

Course Description: Industrial Drawing 2

The student studies the foundations of industrial drawing 2 (Machine Drawing2) and is sometimes called mechanical drawing or machine drawing, but it is an artistic, engineering and industrial language. Like any language, it is used to understand and transfer industrial and engineering ideas between people, whether it is by writing (preparing drawings) or by reading (studying drawings that have already been prepared).

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Machine Drawing2
4.Name of Teaching / Technicians	Lecturer Assistant : Hassan Mahmoud Kidi
5.Available Attendance Forms	My attendance (1 theoretical hour + 2 practical hours - an average of 3 hours per week)

6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	45 hours
8.The history of preparation of this description	2-2-2025

9. Course Objectives

Upon completion of this training module, the trainee has:

1- Active/Review the necessary basics of the engineering drawing language.
2- Normative systems regulating engineering and technical drawing operations.
3- Types of drawing lines.

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1. The student is introduced to the basic concepts of industrial drawing.
2. Expanding students' perceptions, enhancing their concept, and linking industrial drawing with mechanical machines.
3. The student's knowledge of how to draw and use the computer

B - Skills objectives of the course.

1. A detailed study of industrial drawing.
2. A detailed study of the AutoCAD program and how to harness the program in integrating fees.
3. Prepare students to be technicians with experience in industrial drawing, how to analyze drawings, relate them to mechanical machines, and how to operate them.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Asking the student to solve arithmetic problems and solve in different ways to gain skill in the methods of learning industrial drawing.
4. Require the student to bring reports for each painting drawn in the lab.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student.
2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
3. Providing students with practical skills by conducting experiments on electrical appliances inside the laboratory and viewing electrical equipment outside it.

Evaluation methods

The evaluation is carried out on the basis of:

1. Semester exam (theoretical + practical).
2. The work of the year takes into account daily tests, assignments, attendance and reports on experiments.
3. Final exam (theoretical + practical).

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

1. Developing the skill of accuracy in industrial drawing.
2. Enabling students to master industrial drawing theoretically, arithmetically and practically.
3. Develop the student's ability to analyze information and interpret the data obtained by conducting practical industrial drawing calculations and calculating them theoretically as well.

16. Course structure (theoretical + practical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Welding linkage, welding symbols, drawing an assembly board with welding symbols	Student comprehension of the subject	3 hours	First
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	3 hours	Second
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Column connections (couplings) types, drawing an applied painting	Student comprehension of the subject	3 hours	Third
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Clutches, types and uses, with an assembly board	Student comprehension of the subject	3 hours	Fourth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Pulleys and belts, types and uses, with drawing two plates to assemble parts containing belt wheels of various types	Student comprehension of the subject	3 hours	Fifth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Loading chairs, assembly plate drawing for frictional loading chair	Student comprehension of the subject	3 hours	Sixth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Drawing of an applied plate for splitting and assembling the exhaust valve	Student comprehension of the subject	3 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Gears types, neutrophil gears basic definitions, drawing gear justice with assembly plate for engaging gear justice	Student comprehension of the subject	3 hours	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	3 hours	Ninth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Cone gears, drawing an assembly plate for engaging the bevel gear	Student comprehension of the subject	3 hours	Tenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	3 hours	Eleventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Introduction to Autodesk Adventure	Student comprehension of the subject	3 hours	Twelfth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Two-dimensional drawing environment, assembly environment	Student comprehension of the subject	3 hours	Thirteenth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Dynamic analysis and motion environment	Student comprehension of the subject	3 hours	Fourteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Additions to fees	Student comprehension of the subject	3 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	**1- "Fundamental of engineering drawing", Feench and Vierck.2- "Engineering drawing", S. Bogolyubove N. Voinov3- "Basic Technical drawing", Spencer**
2. Main references (sources) Arabic	**1- Engineering Drawing", Abdul Rasoul Al-Khafaf** **2-Engineering Drawing Technology", Fapert & Vander**
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Industrial drawing website

13 . Acceptance	
Prerequisites	1. Classroom. 2. Laboratory. 3. Computers are laboratory.

	4. Blackboard and accessories. Data show.
Minimum number of students	8
Maximum number of students	16
14. Course Development Plan	
Keeping pace with development and introducing computers and its applications in industrial drawing	

Course Description Form

Course Description: Manufacturing Processes 1

This course description provides a brief summary that inspired the course characteristics and learning outcomes expected of the student to achieve, proving whether he or she made the most of the available learning opportunities. And it must be linked to the program description

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Manufacturing processes3 METP212
4.Name of Teaching / Technicians	Eng. Zainab Qusai Sharif
5.Available Attendance Forms	Attendance (2 hours theoretical + 2 hours of work - an average of 4 hours per week)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	60 hours
8.The history of preparation of this description	2-2-2025

9. Course Objectives
Acquire the skill and ability to interact with devices and machines and use them to conduct special operations and measure products produced in workshops.
10. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives First: Identify the turning machine, its parts and types. Second: Identify the types of operations carried out on the lathe. Third: Knowing the variables that govern the different turning processes. Fourth: Identify the number used on the lathe. Fifth: Knowing the laws for calculating the operating rates and the operating time. Sixth: Knowing how to create an operating card.
B - Skills objectives of the course. The student shall be able to: 1- The turning machine is used in the workshop. 2- Identify the type of operation performed on the lathe and how to implement it. 3- Identify the variables of the parts necessary for operation. 4- The operating time of the various turning processes is calculated. 5. Design the operating card for each operation and for each part that is operated.
Teaching and learning methods 1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments. 2. Solve a set of practical and practical examples by the subject teacher.
Evaluation methods
1. Daily interaction and topic preparation. 2. Daily and weekly tests. 3. Quarterly and final exams.
C. Emotional and value goals 1. Teach the student order and hygiene. 1. Teaching patience and prolongation. 2. Acquire the quality of good character and good dealing with auditors.
Teaching and learning methods
1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices , to attract attention and attract students to better reach the idea to the student. 2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics. 3. Providing students with practical skills.

Evaluation methods
The evaluation is carried out on the basis of: 1- Semester exam (theoretical + practical). 2- The work of the year takes into account daily tests, assignments, attendance and reports. 3- Final exam (theoretical + practical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Enabling students to master the subject of manufacturing processes theoretically, arithmetically and practically.

17. Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Engineering tolerances, duplexities, duplex systems, tolerance ranks, duplex units, basic deviations.	Student comprehension of the subject	2 hours	The first
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Types of tolerances, hole foundation system, column foundation system, codes of duplications, tolerances For free dimensions, detailed duplications, selection of dualities and their economic advantages.	Student comprehension of the subject	2 hours	Second
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Geometric tolerances in shape and position and types of shape and position tolerances.	Student comprehension of the subject	2 hours	Third
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Measurement limiters, design of measurement parameters, types of measurement parameters) internal measurement limiters, determinants External measurement, adjustable measurement limiters, solid measuring limiters, special measurement determinants (.	Student comprehension of the subject	2 hours	Fourth

Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Classification of metal manufacturing, metalworking , introduction to the theory of formation of reich and influencing factors, methods of fixing artifacts including round and non-round and the conclusive limits used and Longitudinal and transverse nutrition.	Student comprehension of the subject	2 hours	Fifth
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Operations that can be performed on the caudal lathe	Student comprehension of the subject	2 hours	Sixth
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Identify the pens used and how to fix them for artifacts, turning pens.	Student comprehension of the subject	2 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Identify the types of turning pen angles, the effect of turning pen angles on the cutting process, types of turning pen metals, cutting conditions, cutting elements, uses of cutting speeds, and the use of tables And speed maps, classification of several pieces in relation to the methods of operation and the number of conclusive limits.	Student comprehension of the subject	2 hours	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Methods of producing loot	Student comprehension of the subject	2 hours	Ninth
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	The cut-off limit, the emerging cutter limit and the theory of its formation, the factors that affect it, the factors that lead to its reduction in size, cooling and its importance for cutting processes, various cooling fluids.	Student comprehension of the subject	2 hours	Tenth
Explanation of the topic, discussion,	Theoretical lecture and the use of the screen and the means of explanation	How to conduct the operating card for a group of operations, calculate its elements, and calculate the cutting time for each operation	Student comprehension of the subject	2 hours	Eleventh

solving problems					
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Factors affecting the selection of cutting speed -1 Influence of the properties of the cutting kit-2. The effect of the working elements, 3-The effect of the properties of the operated metal.	Student comprehension of the subject	2 hours	Twelfth
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Tower turning machines, automatic, study of the processes that can be operated and analysis of processes on the product	Student comprehension of the subject	2 hours	Thirteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Operating card	Student comprehension of the subject	2 hours	Fourteenth
Commentary, discussion	Theoretical lecture and the use of the screen and the means of explanation	Study how to program automatic programmed lathes and the factors affecting the operating steps.	Student comprehension of the subject	2 hours	Fifteenth

17. Course Structure (Practical)					
Evaluation method	**Method of education**	**Unit / Subject Name**	**Required Learning Outcomes**	**Hours**	**The week**
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Lathing: Identify the parts of the lathe and its work.	Student comprehension of the experience	2 hours	The first
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify the pens used and how to install them for artifacts.	Student comprehension of the experience	2 hours	Second
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Learn how to use tables and speed maps in a lathe.	Student comprehension of the experience	2 hours	Third
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Turning, stolen by the drawback method.	Student comprehension of the experience	2 hours	Fourth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Turning stolen by the method of the reproduction device or the side ruler.	Student comprehension of the experience	2 hours	Fifth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify lathe accessories and how to install the workpiece on them (triple sample, quadruple sample) Rotary tray, rotary switch, alley)	Student comprehension of the experience	2 hours	Sixth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Install irregular section workpieces on the rotary tray or quad tray and its axes.	Student comprehension of the experience	2 hours	Seventh

Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify the emerging cutter and how to configure it during the turning process. .	Student comprehension of the experience	2 hours	Eighth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify the shapes of the reich produced and their relationship to the depth of the cut and other cutting conditions.	Student comprehension of the experience	2 hours	Ninth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Calculate the cutting time on the lathe and compare it with the theoretical method.	Student comprehension of the experience	2 hours	Tenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Study the causes of the differences that appear between theoretical and practical results.	Student comprehension of the experience	2 hours	Eleventh
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Preparing a card for the sequence of operations.	Student comprehension of the experience	2 hours	Twelfth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Programming tower lathes in workshops.	Student comprehension of the experience	2 hours	Thirteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Perform a practical exercise on the lathe	Student comprehension of the experience	2 hours	Fourteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Perform another practical exercise on the lathe.	Student comprehension of the experience	2 hours	Fifteenth

12. Infrastructure	
1- Dr. Qahtan Khalaf Al-Khazraji, Dr. Adel Mahmoud Hassan, "Principles of Production Processes", Second Edition, University of Baghdad, Higher Education Press, 1987.	**1 Required textbooks**
1- E.P.DeGarmo, J.T. Black, and R.A. kohser " Materials and processes in Manufacturing " , Eighth Edition , John Wiley & Sons , 1999 . 2- Lawrence E. Doyle, Carl A. keyser, James L. Leach, George F. Schrader, and Morse B. Singer " Manufacturing processes and Materials for Engineering " , Third Edition, prentice - Hall, Inc. 1985 . 3- Sherif D.Elwakil " Processes and Design Manufacturing " , Second Edition , PWS Publishing Company , 1998 .	**2 Main references (sources)**
All sober scientific journals related to metal manufacturing processes.	**Recommended books and references (scientific journals, reports ,....)**
Websites for manufacturing processes.	**B Electronic references, websites ....**

13 . Acceptance	
Prerequisites	1. Classroom. 2. Mechanical workshops. 3. Blackboard and accessories. Data show.
Minimum number of students	8

Maximum number of students	50
14. Course Development Plan	

Course Description Form

Course Description: Manufacturing Processes 3

This course description provides a brief summary that inspired the course characteristics and learning outcomes expected of the student to achieve, proving whether he or she made the most of the available learning opportunities. And it must be linked to the program description

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Manufacturing processes4 METP212
4.Name of Teaching / Technicians	Eng. Zainab Qusai Sharif
5.Available Attendance Forms	Attendance (2 hours theoretical + 2 hours of work - an average of 4 hours per week)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	60 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
Acquire the skill and ability to interact with devices and machines and use them to conduct special operations and measure products produced in workshops.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives	

First: Identifying the milling, skimming and grinding machines, their parts and types.
Second: Identify the types of operations carried out on milling, scraping and grinding machines.
Third: Identify the number used on milling, skimming and grinding machines.
Fourth: Knowing the laws for calculating operating rates and operating time.
Fifth- Knowing how to create an operating card.

B - Skills objectives of the course.

The student shall be able to:
1- Milling, scraping and grinding machines are used in the workshop.
2- Identify the type of process performed on milling, scraping and grinding machines and how to implement them.
3- Identify the variables of the parts necessary for operation.
4. The operating card is designed for each operation and for each part that is operated.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good character and good dealing with auditors.

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.

2. Interrogate students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.
3. Providing students with practical skills.

Evaluation methods

The evaluation is carried out on the basis of:
1. Semester exam (theoretical + practical).
2. The work of the year takes into account daily tests, assignments, attendance and reports.

3. Final exam (theoretical + practical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Enabling students to master the subject of manufacturing processes theoretically, arithmetically and practically.

11.Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Milling, Identifying the operations that can be carried out on the milling machines, the parts of the horizontal and vertical milling machines and the nature of the work of each part.	Student comprehension of the subject	2 hours	The first
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Accessories for the machines and the heads of the division and the tools of connecting the product, the Al shiaq, and the gears.	Student comprehension of the subject	2 hours	Second
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Types of milling cutters (disc and finger) and cutters of opening gears.	Student comprehension of the subject	2 hours	Third
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Geometry of angles of milling cutters, cutting methods in the freezer .	Student comprehension of the subject	2 hours	Fourth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Explain the steps of conducting the milling operations, choosing the appropriate machine, the initial dimensions of the	Student comprehension of the subject	2 hours	Fifth

		artifacts, and the methods of connecting the artifacts.			
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Milling different gear types (neutrophilic, conical, spiral, worm gears)	Student comprehension of the subject	2 hours	Sixth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	The method of making the alganfaria meshing, the V block meshing. .	Student comprehension of the subject	2 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Operating rates, cutting and feeding speeds and the basis for their selection for different milling processes.	Student comprehension of the subject	2 hours	Eighth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Scraping: Introduction to the types of scraping machines (Al-Arba'a, Al-Nataha, Al-Raseia), the operations that irrigate the skimming machine, the operating capabilities available in each machine, methods of connecting the artifacts.	Student comprehension of the subject	2 hours	Ninth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Operating rates from the speeds of cutting and feeding, accessories of the scrapings, such as: the heads of the division or special devices, angles of skimming cutting tools, types of forces acting on them.	Student comprehension of the subject	2 hours	Tenth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Skimming skimmer, clarification (cutting stroke, return stroke), methods of fastening on the skimming skimmer machine and operating rates, calculation of cutting time for skimming, preparation of the skimming sequence card.	Student comprehension of the subject	2 hours	Eleventh
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Grinding: Introduction to the theory of cutting and the shape of the raish in the grinding process, the grinding stones used (perimeter, face, side, cup, external, internal), their specifications and uses, linking methods.	Student comprehension of the subject	2 hours	Twelfth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Different grinding machines and working capabilities for each type (external and internal cylindrical grinding machines, tool tooth machines).	Student comprehension of the subject	2 hours	Thirteenth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	Grinding procedures.	Student comprehension of the subject	2 hours	Fourteenth
Commentary , discussion	Theoretical lecture and the use of the screen and the means of explanation	The troubles of grinding .	Student comprehension of the subject	2 hours	Fifteenth

18. Course Structure (Practical)					
Evaluation method	**Method of education**	**Unit / Subject Name**	**Required Learning Outcomes**	**Hours**	**The week**
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Milling, identification of milling machines and accessories and specifications of machines.	Student comprehension of the experience	2 hours	The first
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	A detailed explanation of the Faraiz and its parts.	Student comprehension of the experience	2 hours	Second
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	View samples of operations that can be carried out on milling machines.	Student comprehension of the experience	2 hours	Third
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Learn about milling knives as well as learn about how to test the speed of feeding and vaccination With the freezing machine.	Student comprehension of the experience	2 hours	Fourth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Choose the sequence of operations for the work.	Student comprehension of the experience	2 hours	Fifth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Perform an exercise on the freezer that includes basic operations and the use of the division head.	Student comprehension of the experience	2 hours	Sixth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Complete the exercise by freeing the sewers and shoulders in a group manner.	Student comprehension of the experience	2 hours	Seventh

Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify the skimming machines in the workshop with their spare components and accessories.	Student comprehension of the experience	2 hours	Eighth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	View samples of the operations performed on the skimmer.	Student comprehension of the experience	2 hours	Ninth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Perform a practical exercise on the skimming machine that includes the use of machine accessories.	Student comprehension of the experience	2 hours	Tenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify the grinding machines in mechanical laboratories and see models of different grinding processes and the number, identify in detail the number of age machines with a simple exercise on them.	Student comprehension of the experience	2 hours	Eleventh
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Perform another exercise on the age of the number.	Student comprehension of the experience	2 hours	Twelfth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Learn about the different types of grinding stones and watch the itchy granules (cutter of the grinding stone under Microscope)	Student comprehension of the experience	2 hours	Thirteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Study the signs and symbols on the grinding stone and compare them in the different types of stones	Student comprehension of the experience	2 hours	Fourteenth
Explanation of the topic, discussion, practical experience	Practical experience and use of the screen and explanation	Identify the balancing devices of grinding stone and how to use them, dismantling and installing grinding stone.	Student comprehension of the experience	2 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	1- Dr. Qahtan Khalaf Al-Khazraji, Dr. Adel Mahmoud Hassan, "Principles of Production Processes", Second Edition, University of Baghdad, Higher Education Press, 1987.
2. Main references (sources)	1- E.P.DeGarmo, J.T. Black, and R.A. kohser " Materials and processes in Manufacturing " , Eighth Edition , John Wiley & Sons , 1999 . 2- Lawrence E. Doyle, Carl A. keyser, James L. Leach, George F. Schrader, and Morse B. Singer " Manufacturing processes and Materials for Engineering " , Third Edition, prentice - Hall, Inc. 1985 . 3- Sherif D.Elwakil " Processes and Design Manufacturing " , Second Edition , PWS Publishing Company , 1998 .
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals related to metal manufacturing processes.
B- Electronic references, websites	Websites for manufacturing processes.

13 . Acceptance	
Prerequisites	1. Classroom. 2. Mechanical workshops. 3. Blackboard and accessories. Data show.

Minimum number of students	8
Maximum number of students	50
14. Course Development Plan	

Course Description Form

Course Description: English Language2

The student studies the basic principles of the English language in terms of using expressions that help him in daily life and how to benefit from them, in addition to the basic rules on which the English language is built in order to prevent errors during reading and writing.

Educational institution	Northern Technical University – Mosul Technical Institute
Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
Course Name/Code	English Language NTU201
Name of Teaching / Technicians	Lecturer Assistant: Ashraf Abdul Razzaq Saeed Al-Hasso
Available Attendance Forms	My attendance (2 theoretical hours per week)
Semester / Year	2024-2025
Number of Credit Hours (Total)	30 hours
The history of preparation of this description	2-2-2025
9. Course Objectives	
1. The student should be able to recognize the English language in an advanced way and enable him to communicate in a simple way. 2. Learn about modern methods of learning English. 3. Develop the student's speaking skills through conversations between students during the lecture. 4. Develop the student's ability to understand terms and how to use them.	

10. Course Outcomes and Methods of Teaching, Learning and Assessment

A- Cognitive objectives

1- Introduce the student to the basic principles of the English language.
2- Expand students' perceptions and enhance their understanding of the different words and expressions used.
3- The student knows how to read and write correctly.

B - Skills objectives of the course.

1. A detailed study by developing students' skills for reading, speaking and solving exercises.
2. A detailed study of how different tenses and their rules are formulated.
3. Clarify the meanings of vocabulary and how to use it according to contexts.
4. Preparing students to be able to read various texts, especially scientific ones.

Teaching and learning methods

1. Providing students with the basics and related topics to serve the student's scientific career through recitation, lecture or experiments.
2. Solve and illustrate examples by the subject teacher.
3. Involve the student in solving questions with questions directed by the teacher to determine the extent of the student's understanding and comprehension.
4. Give the student homework to solve, read and discuss during the next lecture.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teach the student order and hygiene.
2. Teaching patience and prolongation.
3. Acquire the quality of good manners and good dealing with others.

Teaching and learning methods

1. Using the data show in the presentation of the material to attract the student's attention through pictures to deliver the material better.
2. Conducting seminars by asking questions (how, what, when, where, does) for different topics.
3. Providing students with practical skills by solving various questions and providing them with the necessary skills to understand solving methods.

Evaluation methods

The evaluation is carried out on the basis of:

1- Semester exam (theoretical).
2- The work of the year takes into account daily tests, assignments, attendance and participation during the lecture.
3- Final exam (theoretical).

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

1. Developing speaking skills.
2. Enabling students to master the English language.
3. Developing the student's ability to read and write by applying everything that was discussed during the lectures throughout the course.

12. Course Structure (Theoretical)

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	General introduction to language and its basics, the use of auxiliary verbs and how to ask for a person's name	Student comprehension of the subject	2 hours	First
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Second
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Third
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Fourth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Fifth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	The formula used during acquaintance between people and the use of the necessary vocabulary in these formulas	Student comprehension of the subject	2 hours	Sixth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Ask about objects, people, times and places using WH-questions	Student comprehension of the subject	2 hours	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Ninth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Using negation and interrogative for different tenses, and answering questions in different ways	Student comprehension of the subject	2 hours	Tenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Eleventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Twelfth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	Read texts and apply skills by answering questions and solving exercises. The possessive form in the English language and how to	Student comprehension of the subject	2 hours	Thirteenth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board	express it, the question of time and the expressions used in it.	Student comprehension of the subject	2 hours	Fourteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the white board		Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
1. Required textbooks	Headway Book
2. Main references (sources)	Dictionary
A-Recommended books and references (scientific journals, reports ,....)	Scientific journals and books related to language and its uses
B- Electronic references, websites	English, conversation and grammar websites.

13 . Acceptance	
Prerequisites	1. Classroom. 2. Voice Lab. 3. Blackboard and accessories. 4. Data show.
Minimum number of students	8
Maximum number of students	44
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the sound laboratories that allow the student to identify a way to pronounce properly and the correct and varied use of vocabulary in the English language	

Course Description Form

Course Description: Industrial Management

The student understands the principles of industrial management and what are the administrative and engineering obstacles in factories and laboratories and ways to solve them.

1.Educational institution	Northern Technical University – Mosul Technical Institute
2.Scientific Department / Center	Department of Mechanical Techniques – Metal Production Branch
3.Course Name/Code	Industrial Management
4.Name of Teaching Person(s)	Assistant Lecturer: Hassan Mahmoud Kidi
5.Available Attendance Forms	Attendance (two hours per week)
6.Semester / Year	2024-2025
7.Number of Credit Hours (Total)	30 hours
8.The history of preparation of this description	2-2-2025
9. Course Objectives	
1. Clarifying the role of industrial management principles 2. The relationship between factories and the engineer and technician, 3. How to make some calculations for the design of production lines and identify all the factors affecting them.	
10. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1. Recognize the concepts of industrial management principles 2. Expand students' perceptions and enhance the concept of design by giving them principles and design calculations. 3. Give the student experience in fees for industrial management.	

B - Skills objectives of the course.

1. Detailed study of industrial management
2. Study the mathematical details that the student needs during industrial management
3. Prepare the technologist to be a successful technician by learning the correct principles of the mechanical techniques specialization of the production branch.

Teaching and learning methods

1. Provide students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through speech, lecture or experiments.
2. Solve a set of practical and practical examples by the subject teacher.
3. Through discussion, students are involved by solving some practical problems.
4. Asking the student to visit the library and the international information network (Internet) to obtain additional knowledge of the study materials and to observe, maintain and repair the machines in the machinery workshop at the Institute.

Evaluation methods

1. Daily interaction and topic preparation.
2. Daily and weekly tests.
3. Quarterly and final exams.

C. Emotional and value goals

1. Teaching the student order and cleanliness
2. Teaching patience and stretching
3. Acquire the quality of good manners and good dealing with auditors

Teaching and learning methods

1. Using modern means in presenting the scientific and theoretical side, such as Data Show devices, to attract attention and attract students to better reach the idea to the student.
2. Giving students extracurricular assignments that require them to exert skills and self-explanations in experiential ways.
3. Interrogate the students through panel discussions by asking thinking questions (how, why, when, where, any) for specific topics.

4. Using brainstorming and feedback in order to activate the accumulated experiences of students by linking what has been taken from the study materials in the previous academic stages and linking them to the new. 5. Providing students with practical skills by reviewing the machines inside and outside the institute.
Evaluation methods
The evaluation is carried out on the basis of: 1. First semester exam (theoretical). 2. The work of the year takes into account daily tests, duties, attendance and participation. 3. Final exam (theoretical).
d. General and transferable qualification skills (other skills related to employability and personal development). 1. Developing the skill of accuracy in measurements 2. Developing the skill of cooperation and the alternative system 3. - Enabling students to subject the technology of machine parts in its applied and cognitive aspects. 4. - Develop the student's ability to analyze information and interpret the data obtained through calculations. 5. - Enable the student to conduct a field survey to identify and solve problems on the ground.

16. Course Structure

Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Stages and development of management, basic principles of management, characteristics of management, levels of management.**	Student comprehension of the subject	2 hours	First
Discussion, Quick Exam, Problem	Theoretical lecture and the use of the screen and the	**Administrative functions, industrial management, its functions, industrial engineering,**	Student comprehension of the subject	2 hours	Second

Solving, Homework	means of explanation	**characteristics, industrial management.**			
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**- Location and arrangement of the industrial unit** **- The main factors affecting the selection of industrial project sites** **- arrangement of the industrial unit (preliminary arrangement of the plant).** **- Classification of types of industrial unit arrangements.** **- Advantages, determinants and cases in which it applies (commodity arrangement, functional, mixed, common).**	Student comprehension of the subject	2 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Production planning, production planning concept, production planning and control objectives.**	Student comprehension of the subject	2 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**− Feasibility study for industrial projects:** **− An idea of the feasibility study for industrial projects.** **− Industrial Project** **− Stages of feasibility studies** **The importance of feasibility studies**	Student comprehension of the subject	2 hours	V
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Types of production, production planning methods, linear programming methods, graphic method and transport method.**	Student comprehension of the subject	2 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Study of work, methods of study of work, study of method, study of time, measurement of work.**	Student comprehension of the subject	2 hours	Eighth

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Maintenance, importance of maintenance, concept of technological system**	Student comprehension of the subject	2 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Types of maintenance, types of appearances**	Student comprehension of the subject	2 hours	X
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Costs, cost classification, wages.**	Student comprehension of the subject	2 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Methods of calculating wages, incentives, types of incentives.**	Student comprehension of the subject	2 hours	Thirteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Procurement management: procurement, procurement steps, types of stored materials and methods of controlling them.**	Student comprehension of the subject	2 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	**Industrial safety, types of accidents, roads from accidents, preventive equipment and its types.**	Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
Engineering Mechanics Book	
1. Required textbooks	1- Industrial Projects Management (Industrial Management) AuthorsAl , Shakarji، commendable· 1967 2- Ali Riad Management Information Systems Organization and Technology Riad Sultan Ali. Amman Dar, Zahran 2006 p. 2983/11/2006: Ra Descriptors: / Business Administration // Management Information
2. Main references (sources)	All sober scientific journals related to the broad concept of industrial management
A-Recommended books and references (scientific journals, reports ,....) **B- Electronic references, websites ....**	Industrial Management Websites

13 . Acceptance	
Prerequisites	1. Classroom 2. Blackboard and accessories 3. Data show
Minimum number of students	8
Maximum number of students	30
14. Course Development Plan	
Keeping pace with the development and introduction of the computer and its applications in the design	