

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



Academic Program and Course Description Guide

2025

Program description templateAcademic

University Name: Northern Technical University

College/Institute: Technical Institute of the Round

Scientific Department: Department of Mechanical Engineering

Name of academic or professional program: Diploma in Mechanical Technologies

Final Certificate Name: Diploma in Mechanical Engineering

Study system: Courses

Description prepared on: 1/9/2025

Date the file was completed: 15/9/2025

Signature: Signature: 

Department Head: Dr. Asmaa Munim Abdullah

Date:

Signature: 

Assistant Dean for Scientific Affairs: Dr. Hanan Shihab Ahmed

Date:

The file was reviewed by

Quality Assurance and University Performance Division

Name of the Director of the Quality Assurance and University Performance Division:
Eng. Haider Ali Mohsen

the date:

the signature: 



Dean's approval

Dr. Maha Al-Taif Jassim

1. Program Vision

The Department of Mechanical Technologies is one of the main technological departments, and the department is moving towards expanding the base of technical education and its modern applications to be a leader in providing accredited technical services, with a spirit of competition and cooperation with the community.

2. Program Message

The Department of Mechanical Engineering adopted a general mission based on the framework of technical education in Iraq, which it strives to achieve annually to highlight the department's excellence. The general objectives focus on graduating national technical personnel with a level of education and training that enables them to understand technological systems and support the facilitation of technological development to keep pace with rapid global technological advancements. The department's mission includes the following:

1. Using computer and internet technologies in education and training.
2. Activating the relationship with the private sector in the areas of training.
3. Monitoring the development of training plans and then updating laboratories and workshops.

3. Program Objectives

- 1- Preparing qualified mechanical technical personnel who will be a link between the specialized engineer and the skilled worker, capable of carrying out the technical work assigned to them.
- 2- To provide the student with theoretical and applied knowledge in the fields of mechanics (production, operation, welding, plumbing, industrial drawing) and to measure their mastery of it through practical evaluation.
- 3- Developing skills in operating, maintaining, diagnosing, and treating mechanical machines and equipment in accordance with occupational safety standards.
- 4- Equipping the student with computer skills, engineering drawing programs, and modern manufacturing techniques.
- 5- Establishing professional and ethical values, teamwork, and commitment to

quality and safety standards in the industrial work environment.

6– Linking the program's outputs to the labor market through summer and field training in factories and industrial facilities.

4. Program accreditation

The application for program accreditation has been submitted.

5. Other external influences

The presence of supporting entities contributes to:

1– Linking the program to the labor market: Monitoring the needs of industrial establishments and factories and training students in a manner that suits them.

2– Practical training: Providing summer and field training opportunities in companies, factories, industrial institutions, and electricity and manufacturing departments.

3– Technical and training support: Organizing specialized courses and workshops and updating laboratories and workshops to keep pace with technological development.

4– Continuous guidance: Providing technical advice to develop curricula in line with developments in the mechanical field.

6. Program Structure

comments*	Percentage	Study unit	Number of courses	Program structure
Core course	17.4%	20	10	Institution (university) requirements
essential	10.4%	12	4	College requirements
essential	72.2%	83	23	Department requirements

–	–	–	–	Summer training
–	–	–	–	Other

7. Program Description				
Credit Hours		Course name	Course code	Year/Level
practical	theoretical			
–	2	metal alloys	METP125	Level One
2	2	kinematics	METP121	
1	1	Computer Principles	NTU102	
2	2	Mechanics of Statics	METP120	
–	2	Mathematics/1	TIMO110	
–	2	Mathematics/2	TIMO111	
–	2	English language	NTU101	
–	2	Democracy and human rights	NTU100	
1	1	Sports	NTU104	
2	2	Measurements and welding	METP122	
2	2	Plumbing	METP123	
3	–	Two-dimensional engineering drawing	METP126	
3	–	3D engineering drawing	METP127	
6	–	Mechanical Factors	TIOM112	
2	1	electrical technology	METP129	
–	2	Arabic	NTU103	
–	–	Summer training	METP131	
6	–	Advanced laboratories	METP128	
–	2	Properties of metallic materials	METP124	
–	2	Principles of machine parts	METP210	Level Two
2	2	Geometric tolerance	METP212	
2	2	Principles of Mineralogy	METP216	
6	–	Initial operating workshops	METP214	
–	2	Professional ethics	NTU204	
–	2	English language	NTU200	
1	1	computer	NTU201	
–	3	Principles of Industrial Drawing	METP218	
–	2	Crimes of the Ba'ath regime in Iraq	NTU203	
2	2	Welding operations	METP223	
–	2	Advanced machine parts	METP211	
2	2	Operations	METP213	
2	2	Heat balance diagrams	METP217	

6	–	Advanced operating workshops	METP215	
2	–	Project/1	METP208	
2	–	Project/2	METP209	
3	–	Advanced Industrial Drawing	METP219	
–	2	Industrial Management	TUDO222	
–	2	Arabic	NTU202	

8. Expected learning outcomes of the program

Knowledge A

A1– Qualifying the student to apply knowledge in various cognitive fields in general and in the field of general mechanics.

A2– The student's knowledge of professional principles and responsibilities and industrial management.

A3– Enabling the student to provide general maintenance for mechanical equipment in case of a malfunction.

A4– The student should learn leadership skills, values of commitment, ethical behavior, and respect for others.

Skills B

B1– Training students to work and integrate into multidisciplinary teams.

B2– Qualifying students to perform periodic maintenance on the devices and equipment available in the workplace.

B3– Qualifying students to use modern technologies, skills and specialized courses in the field of mechanics.

B4– Training the student to identify any device malfunctions.

Values C

A1– The ability to manage engineering work.

C2– The ability to use mechanical devices and machines to meet the required needs within the field of specialization.

Q3– The ability to work with the latest hardware and software for diagnosing mechanical faults.

Q4– Teaching the student the ability to adapt to engineering disciplines.

2	2	Metal forming processes	METP224	
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9. Teaching and learning strategies

The instructor explains the theoretical material on the board, using a slide projector, paper lectures, educational kits, systematic training, discussion groups, laboratories, and summer training in companies, factories, industrial institutions, facilities, and electricity and manufacturing departments.

10. Assessment Methods

Submitting weekly reports, daily, term, final, and activity tests.

11. Faculty

Faculty members (list all faculty members in the academic department, including external and internal lecturers)

Faculty preparation		Special requirements/skills (if any)		Specialization		Scientific rank
lecturer	angel			private	general	
	angel		PhD in Mechanical Engineering	applied	Mechanic	teacher
	angel		PhD in Engineering	internal combustion	Mechanic	teacher
	angel		production	production	Mechanic	Assistant teacher
	angel		production	production	Mechanic	Assistant teacher
	angel		production	production	Mechanic	Assistant teacher
	angel		practical	production	Mechanic	Assistant teacher

Professional development

Orienting new faculty members

- Training courses in the field of metals, mechanical testing, metal fabrication, casting and other manufacturing processes.
- Specialized courses using mechanical testing equipment.
- Courses to test journals suitable for publication and with a high impact factor.

Professional development of faculty members

- Training courses in machine operation, welding, welding and forming processes.
- Developing scientific publishing skills.

12. Admission Criteria

The basic criterion for accepting students into the department is based on their

names appearing on the central admission lists for preparatory school graduates, as well as accepting a certain number of vocational school graduates who have chosen. The institute is listed on the central application form according to its grade point average.

13. Key sources of information about the program

- 1– The approved textbooks for each course, which are updated regularly.
- 2– Specialized scientific references in mechanics, production, metallurgy and industrial drawing issued by reliable publishing houses.
- 3– Digital library, databases, digital resources and scientific websites.
- 4– Scientific research and articles published in accredited engineering journals that keep up with the latest developments.
- 5– Engineering specifications and standards related to the field (such as ASME and ISO).

14. Program Development Plan

- 1– Developing the laboratories of the Mechanical Engineering Department, as well as developing the curriculum by deleting, adding, and replacing.
- 2– Getting acquainted with the latest scientific developments.
- 3– Participating in international and local conferences.
- 4– Participating in scientific workshops inside and outside Iraq.

Program Skills Plan

Learning outcomes required from the program															
Values				Skills				Knowledge				Essential or optional	Course Name	Course code	Year/Level
Q 4	Pa rt 3	Pa rt 2	Pa rt 1	B4	B3	B2	B1	A4	A3	A2	A1				
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	metal alloys	METP125	Level One
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	kinematics	METP121	
			✓				✓			✓	✓	essential	Computer Principles	NTU102	
		✓	✓			✓	✓	✓	✓	✓	✓	essential	Mechanics of Statics	METP120	
		✓	✓			✓	✓	✓	✓	✓	✓	essential	Mathematics/1	TIMO110	
		✓	✓			✓	✓	✓	✓	✓	✓	essential	Mathematics/2	TIMO111	
		✓	✓			✓	✓	✓	✓	✓	✓	essential	English language	NTU101	
		✓	✓			✓	✓			✓	✓	essential	Democracy and human rights	NTU100	
		✓	✓			✓	✓	✓	✓	✓	✓	optional	Sports	NTU104	
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	Measurements and welding	METP122	
		✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Two-dimensional engineering drawing	METP126	
		✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	3D engineering drawing	METP127	
		✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Mechanical Factors	TIOM112	
		✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Plumbing	METP123	

		✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	electrical technology	METP129	
		✓	✓			✓	✓			✓	✓	essential	Arabic	NTU103	
												essential	Summer training	METP131	
	✓	✓	✓		✓	✓	✓			✓	✓	essential	Advanced laboratories	METP128	
	✓	✓	✓		✓	✓	✓		✓	✓	✓	essential	Properties of metallic materials	METP124	
	✓	✓	✓		✓	✓	✓		✓	✓	✓	essential	Principles of machine parts	METP210	Level Two
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	essential	Geometric tolerance	METP212	
	✓	✓	✓		✓	✓	✓		✓	✓	✓	essential	Principles of Mineralogy	METP216	
	✓	✓	✓		✓	✓	✓		✓	✓	✓	essential	Initial operating workshops	METP214	
	✓	✓	✓			✓	✓			✓	✓	essential	Professional ethics	NTU204	
	✓	✓	✓			✓	✓			✓	✓	essential	computer	NTU201	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Principles of Industrial Drawing	METP218	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Crimes of the Ba'ath regime in Iraq	NTU203	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Welding operations	METP223	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Advanced machine parts	METP211	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Heat balance diagrams	METP217	
✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Operations	METP213	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Advanced operating workshops	METP215	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Project/1	METP208	

	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Project/2	METP209	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Advanced Industrial Drawing	METP219	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	essential	Industrial Management	TUDO222	
	✓	✓	✓			✓	✓			✓	✓	essential	Arabic	NTU202	
	✓	✓	✓		✓	✓	✓			✓	✓	essential	Metal forming processes	METP224	
	✓	✓	✓		✓	✓	✓			✓	✓	essential	English language	NTU200	

Course description template

Level 1 - Chapter 1

1. Course Name:
Mechanics of Statics
2. Course code:
METP120
3. Semester/Year:
Chapter 1/ 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Nour Abdel Latif Ezzat e-mail: noor.ae@ntu.edu.iq
8. Course Objectives:
_ Understanding the principles of equilibrium for forces acting on bodies. _ Analysis of forces and moments in mechanical systems. _ To enable the student to solve applied problems in engineering.
9. Teaching and learning strategy:
_ A simplified theoretical explanation with gradual examples. _ Solving problems within the classroom step by step. _ Theoretical and practical lectures. _ Use drawings and diagrams to illustrate the forces.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Fundamental Concepts	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Analysis of forces	Knowledge and Application	4	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Moment of a force	Knowledge and Application	4	the third

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Couple	Knowledge and Application	4	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Couple	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Resultant of Non-Collinear Coplanar Forces	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Equilibrium	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Equilibrium	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Friction	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Friction	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Resultant of forces in 3_Dimensions	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Center of Mass and Centroid	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Center of Mass and Centroid	Knowledge and Application	4	thirteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Moment of inertia (second moment of area of regular sections)	Knowledge and Application	4	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Moment of inertia (second moment of area of regular sections)	Knowledge and Application	4	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Fundamentals of Engineering Mechanics, Kinematics and Dynamics kinematics and mechanical vibrations	Required textbooks (curriculum books, if available)
Fundamentals of Engineering Mechanics, Kinematics and Dynamics kinematics and mechanical vibrations	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
computer
2. Course code:
NTU102
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
15 hours of theory + 15 hours of practical work / 2 units
7. Name of the course coordinator
Name: Mustafa Kamel Youssef e-mail: mustafa.ky@ntu.edu.iq
8. Course Objectives:
_The student must be able to handle a computer, be familiar with its use, understand how to use its software, be able to work on a computer, and have knowledge of the principles of the Internet in the field of specialization. _This course aims to study Windows, Microsoft, and Word programs and train the student to use its basics and tools that will serve the student in the coming years in all academic and practical fields.
9. Teaching and learning strategy:
_A simplified theoretical explanation with a live practical demonstration. _Practical application in the laboratory for each topic. _Collaborative learning among students within the laboratory.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	An introduction to computers: their generations–Its components: physicalHardware and Software–(System software and application software.	Knowledge and Application	2	the first
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Operating systemMS-DOS: The Concept of an Operating System–System signal–discs–Evidence, its levels, and files–Internal operating system commandsInternal Commands–Foreign MinistryExternal Commands (Most commonly used commands).	Knowledge and Application	2	the second
Reports, assignments, written, oral, and written	Whiteboard, PowerPoint slides, conducting	Internal operating system commands: Internal commands: Dir–Del –Time–Date–Cls–RD–CD–MD–Echo–Ren–Copy–Vol–Ver–Path	Knowledge and Application	2	the third

exams	practical experiments				
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Operating systemWindows: The concept of the Windows system–Its advantages–Its basic requirements–System operation–Desktop Home Screen ComponentsDesktop–The concept of the iconIcon–How to handle mouse activities–Importance and components of the taskbarTask Bar–Taking advantage ofStart to access the programs–The concept of loaded tasks–Exit the system and turn off the computer.Shut down.	Knowledge and Application	2	Fourth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Understanding the window concept for any program and identifying its main components–Dealing with Desktop icons such as (My Computer)–My Documents–Recycle Bin).	Knowledge and Application	2	Fifth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Identifying the componentsMy Computer in terms of disks–folders and files–How to format floppy disks–Copying folders and files–Utilize cut and paste functionality and understand the properties of disks, folders, and files.–Dealing with the Recycle Bin and how to delete and recover files using the features it offers.	Knowledge and Application	2	Sixth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Utilizing control panel programsControl Panel features include icons like Mouse and Display, and instructions on how to change the desktop background, control the screen saver, and modify the appearance and colors of window menus.–icon– Add/Remove program in Add/Remove program.	Knowledge and Application	2	Seventh
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Taking advantage of the optionRun is used to execute programs directly and also to switch to the MS DOS operating system signal.–And to comply with his orders.	Knowledge and Application	2	Eighth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Using entertainment programs such asWindow media player for playing movies.	Knowledge and Application	2	Ninth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Take advantage of additional programsAccessories such as a calculator.	Knowledge and Application	2	tenth
Reports, assignments, written, oral, and written	Whiteboard, PowerPoint slides, conducting	Working with the drawing programPaint allows you to create, save, and retrieve drawings using the commands it provides.	Knowledge and Application	2	eleventh

exams	practical experiments				
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Working with the notes window Notepad and WordPad are used for writing, saving, retrieving, printing, changing print style, and formatting text.	Knowledge and Application	2	twelfth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Learn how to get help Help and its various methods.	Knowledge and Application	2	thirteenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	The concept of a computer virus Computer Viruses: How to Get Infected–Its types, treatment, and handling through anti-virus programs Antiviruses available within the Windows operating system environment.	Knowledge and Application	2	fourteenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Dealing with the Recycle Bin and how to delete and recover files through what the Recycle Bin provides in this regard.	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Structure and Interpretation of Computer Programs- Harold Abelson, Gerald Jay Sussman, Julie Sussman - 1985 Introduction to the Theory of Computation - Michael Sipser - 1996	Required textbooks (curriculum books, if available)
Computer Organization and Design: The Hardware/Software Interface - David A. Patterson, John L. Hennessy - 1994	Main references (sources)
Operating System Concepts - Abraham Silberschatz, Peter B. Galvin, Greg Gagne - 1983	Recommended books and references (scientific journals and reports...)
https://www.microsoft.com/software-download/windows11	Electronic references and websites

1. Course Name:
Mathematics/1
2. Course code:
TIMO110
3. Semester/Year:
Chapter One / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail:najmmolan@ntu.edu.iq
8. Course Objectives:
_Strengthening the student's mathematical fundamentals. _Understanding basic algebraic and geometric concepts. _Applying mathematics to geometric problems.
9. Teaching and learning strategy:
_A gradual theoretical explanation from easy to difficult. _Solve various examples within the classroom. _Continuous exercises to enhance understanding.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Operations on countries and their graphical representation	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The concept of limits and algebraic limits	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Continuity and its applications	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to differential calculus and the concept of the derivative	Knowledge and Application	2	Fourth
Reports,	Whiteboard,	Basic rules of derivation	Knowledge	2	Fifth

theoretical, oral, and written exams	PowerPoint slides, practical experiments		and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Derivatives of algebraic and rational functions	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Derivatives of trigonometric functions	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Derivatives of basic and logarithmic functions	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chain rule and implicit differentiation	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Higher derivatives and their applications	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applications of derivatives (velocity, acceleration, rates)	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Maximum and minimum values and their geometric applications	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Maximum and minimum values and their geometric applications	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Maximum and minimum values and their geometric applications	Knowledge and Application	2	fourteenth
Reports,	Whiteboard,	General review and	Knowledge	2	fifteenth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	comprehensive problem solving	and Application		
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11. Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12. Learning and teaching resources	
	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
English language
2. Course code:
NTU101
3. Semester/Year:
First semester / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: M. Hussein Ahmed Ali e-mail: hussein.aa@ntu.edu.iq
8. Course Objectives:
_Developing basic language skills: mastering listening, speaking, reading, and writing in a balanced way to achieve high efficiency in communication. _Effective communication: Enabling the student to express his thoughts and opinions clearly and to understand spoken and written texts in diverse contexts.
9. Teaching and learning strategy:
_ Using visual and technological teaching aids to simplify grammar and vocabulary. _ Providing a safe and comfortable learning environment that encourages speaking without fear of making mistakes and focuses on the four skills (listening, speaking, reading, writing) in a balanced way. _Linking vocabulary words to real-life sentence contexts instead of memorizing isolated lists.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction and fundamentals of the English language and curriculum vocabulary	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Rules for nouns, rules for verbs, ,ed -rules for adding ,IngAddition rules - S-rules for adding	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	the third

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	pronouns	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	auxiliary verbs	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Verb rules	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Rules of names	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Rules of attributes	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	thirteenth

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical applications	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Mid-termexam	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Headway-Beginner student's book	Required textbooks (curriculum books, if available)
Headway- Beginner student's book English Course\Omar AL_Hourani English Grammar\Betty Schramper Azar	Main references (sources)
	Recommended books and references (scientific journals and reports...)
Google Chrome Browser Firefox Browser Opera Browser http://www.expenglish.com/vd An AZ of English Grammar & Usage Geoffrey Leech. http://www.English Page.com/	Electronic references and websites

1. Course Name:
Democracy and human rights
2. Course code:
NTU100
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence, my online presence
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Salman Amer Badri e-mail: salman.amir@ntu.edu.iq
8. Course Objectives:
Understanding the freedoms and rights of the individual and society, and the role of each individual in it in terms of rights and duties, in addition to the various state policies.
9. Teaching and learning strategy:
_ Simplified theoretical lectures. _ Classroom discussions about real-world issues. _ Interactive learning involves asking questions and sharing opinions. _ Case studies. _ Student presentations.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	The concept of the state and government / the legislative body / the principle of separation of powers	Knowledge	2	the first
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	The executive body / the judicial body / the House of Representatives, in their discussions and decisions, by rulings.	Knowledge	2	the second
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical	The concept of freedom / First: Basic or individual freedom: 1- Freedom, security, and a sense of reassurance	Knowledge	2	the third

	experiments	2- Freedom of movement (travel) 3- Freedom of privacy and respect for the sanctity of the home and private life 4- Freedom of confidentiality of personal correspondence			
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Intellectual and cultural freedom: 1- Freedom of education 2- Freedom of assembly 3- Freedom of worship 4- Freedom of opinion and expression 5- Political freedom	Knowledge	2	Fourth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Nomination for elections: 1- The right to vote 2- Periodic elections 3- The right to criticize the government	Knowledge	2	Fifth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	1- Freedom to form and join associations. 2- Freedom to form and join trade unions.	Knowledge	2	Sixth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	exam	Knowledge	2	Seventh
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Economic and social freedom: 1- Freedom of work. 2- Freedom of ownership. 3- Freedom of trade and industry.	Knowledge	2	Eighth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	4- Freedom of social security and healthcare / Democracy	Knowledge	2	Ninth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical	Democracy in Iraq	Knowledge	2	tenth

	experiments				
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Election of the Iraqi Transitional National Assembly	Knowledge	2	eleventh
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Goals of democracy	Knowledge	2	twelfth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Forms of Democracy / Indirect Democracy / Popular Proposal / Popular Referendum	Knowledge	2	thirteenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	People's participation in legislative work / popular proposal / popular referendum	Knowledge	2	fourteenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting practical experiments	Types of referendums / Disadvantages of public referendums / Popular solutions	Knowledge	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Public Freedoms and Democracy / Lectures at Al-Mustansiriya University / University of Babylon	Required textbooks (curriculum books, if available)
.2015 Democracy and Human Rights – Ahmed Elsayed Atta Human rights and democracy in the Arab world–Hatem El-Meligy 2010.	Main references (sources)
Human rights in Islam and international humanitarian law–Mohammed Al-Shaiba, 2007.	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Measurements and welding
2. Course code:
METP122
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Asmaa Munim Abdullah e-mail:asmaamuneam@ntu.edu.iq
8. Course Objectives:
_ Introducing the student to the basic concepts of manufacturing processes. _ Developing the student's skills in dealing with tools and machines. _ Enabling the student to link the theoretical aspect with practical application.
9. Teaching and learning strategy:
_ A theoretical explanation of the concepts. _ Practical application in the laboratory or workshop. _ Learn by doing, using real tools _ Solve exercises on reading measurements

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Definition of measurement	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Measuring instruments and types of direct and indirect measuring instruments	Knowledge and Application	4	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	How to use each measuring tool with examples	Knowledge and Application	4	the third
Reports,	Whiteboard,	Reasons for measurement	Knowledge	4	Fourth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	error	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Reasons for measurement error	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Scientific units of measurement, the importance of measurement	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Vernier: Definition, Parts, and How to Use It	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of vernier and dimensional calculations	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	How to calculate accuracy, calculation examples and exercises	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of molds	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Uses and methods of determining dimensions using measurement templates	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The micrometer: its parts, types, and uses	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Examples of micrometer readings and accuracy calculations	Knowledge and Application	4	thirteenth
Reports,	Whiteboard,	Projector	Knowledge	4	fourteenth

theoretical, oral, and written exams	PowerPoint slides, practical experiments		and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	exam	Knowledge and Application	4	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Mohammed Mardi - Manufacturing Processes Book 1 Ali Ibrahim Al-Mousawi - Metal Manufacturing Operations	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Two-dimensional engineering drawing
2. Course code:
METP126
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
45 working hours / 3 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail: najmmolan@ntu.edu.iq
8. Course Objectives:
_ To equip students with the skills to perform basic engineering operations usingAUTO CADAccording to technical principles and standards. _ Developing students' ability to use drawing and modification commands in solving engineering problems and preparing drawings accurately and efficiently.
9. Teaching and learning strategy:
_ Interactive lecture with practical explanation and direct application usingAutoCAD. _ Applied learning through laboratory exercises and practical projects to develop drawing skills and engineering processes.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to engineering processes and the use of AutoCAD software in engineering drawing	Knowledge and Application	3	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applying basic drawing commands for simple engineering operations	Knowledge and Application	3	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing lines, angles, circles and arcs and their geometric applications	Knowledge and Application	3	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Modification and editing orders in the execution of engineering operations	Knowledge and Application	3	Fourth

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing polygons and regular and irregular geometric shapes	Knowledge and Application	3	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applications of engineering constructions (joining, dividing, bisecting)	Knowledge and Application	3	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Using absolute, relative, and polar coordinates in engineering drawing	Knowledge and Application	3	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Performing complex engineering operations using drawing and editing commands	Knowledge and Application	3	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applications for layers, properties, and managing drawing elements	Knowledge and Application	3	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing geometric projections and their applications	Knowledge and Application	3	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Hatching, dimensions, adding symbols and technical notes	Knowledge and Application	3	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical exercises on construction problems and advanced engineering processes	Knowledge and Application	3	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Integrated applications for drawing geometric shapes using AutoCAD	Knowledge and Application	3	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Implementing a small-scale practical project in engineering operations	Knowledge and Application	3	fourteenth

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Comprehensive review and final practical test	Knowledge and Application	3	fifteenth
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11. Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12. Learning and teaching resources	
Engineering drawing book Prepared by: Abdul Rasoul Abdul Hussein	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Properties of metallic materials
2. Course code:
METP124
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence, my online presence
6. Number of credit hours (total) / Number of units (total)
30 hours of theory/2 units
7. Name of the course coordinator
Name: Ahmed Jassim Mohammed e-mail: Ahmed.jm@ntu.edu.iq
8. Course Objectives:
After completing the course, the student will be able to Explaining the basic concepts of material properties and the geometric structure of matter.
9. Teaching and learning strategy:
_ A simplified theoretical explanation with examples. _ Laboratory tests (tensile strength test, hardness test). _ Using models and diagrams to illustrate the structure. _ Linking the material to practical application in workshops.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to the science of mineral properties and engineering materials	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Classification of engineering materials and minerals	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	atomic structure of elements	Knowledge and Application	2	the third
Reports, theoretical, oral, and	Whiteboard, PowerPoint slides,	Atomic bonds and their types	Knowledge and Application	2	Fourth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Crystalline structure of minerals	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Crystal unit and crystal systems	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Point and linear crystal defects	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Dislocations and their effect on properties	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Slips and twins	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	diffusion in minerals	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Physical properties of metals	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Mechanical properties of materials	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Stress and anxiety	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and	Whiteboard, PowerPoint slides,	My stress and emotional curve	Knowledge and Application	2	fourteenth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Tensile test for metals	Knowledge and Application	2	fifteenth

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

12. Learning and teaching resources	
Modern Physical Metallurgy and Materials Engineering	Required textbooks (curriculum books, if available)
A Textbook of Material Science and Metallurgy	Main references (sources)
Wiley Publishing	Recommended books and references (scientific journals and reports...)
Springer Physical Metallurgy Materials Science	Electronic references and websites

1. Course Name:
electrical technology
2. Course code:
METP129
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 15 hours of practical work / Number of units: 3
7. Name of the course coordinator
Name: Laith Azba e-mail: laith.rashad.dti@ntu.edu.iq
8. Course Objectives:
_ To equip the learner with the skills to select appropriate electrical components for various engineering applications based on their electrical characteristics. _The learner's knowledge of how to analyze and interpret the behavior of electrical circuits under different conditions such as changes in voltage and current, and thus understanding how these factors affect the performance of circuits, which helps in predicting their efficiency and sustainability in multiple applications.
9. Teaching and learning strategy:
_A simplified theoretical explanation with examples. _Practical experiments in the laboratory. _Solve problems involving circles. _Linking concepts to industrial applications.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to electrical terminology, Ohm's law, and direct current.	Knowledge and Application	3	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve examples of applying Ohm's law and the most important unit conversions	Knowledge and Application	3	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The relationship between voltage, current, and resistance, and an explanation of Ohm's law.	Knowledge and Application	3	the third
Reports, theoretical,	Whiteboard, PowerPoint	Electrical circuit and electric motors	Knowledge and	3	Fourth

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Electrical circuit (open circuit) with examples explained	Knowledge and Application	3	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Electrical circuit (closed circuit) with examples explained	Knowledge and Application	3	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Series electrical circuits (circuits connected in series) are classified with examples.	Knowledge and Application	3	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Parallel circuits with explanations and examples	Knowledge and Application	3	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Explanation of examples of parallel and series circuits	Knowledge and Application	3	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Monthly exam for previous subjects	Knowledge and Application	3	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Alternating current (AC): its main applications and examples	Knowledge and Application	3	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	AC circuits and AC power sources	Knowledge and Application	3	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Advantages and disadvantages of alternating current and its phases	Knowledge and Application	3	thirteenth
Reports, theoretical,	Whiteboard, PowerPoint	three-phase alternating current	Knowledge and	3	fourteenth

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Final exam for the semester	Knowledge and Application	3	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Mechanical Factors
2. Course code:
TIOM112
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence
6. Number of credit hours (total) / Number of units (total)
90 practical hours / 6 units
7. Name of the course coordinator
Name: Ahmed Jassim Mohammed e-mail: Ahmed.jm@ntu.edu.iq
8. Course Objectives:
_ Identifying the tools and equipment of mechanical workshops and their uses. _ Applying occupational safety rules within the workshop. _ Performing basic welding operations correctly. _ Using manual filing and measuring tools. _ Developing practical skills and accuracy in performing mechanical work. _ Working in a spirit of cooperation and taking responsibility within the workshop.
9. Teaching and learning strategy:
_ Direct practical demonstration within the workshop. _ Learning through practice and practical application. _ Presentation of models and practical experiments. _ Training students to solve simple technical problems.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction and Occupational Safety	Knowledge and Application	6	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Welding basics	Knowledge and Application	6	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	electric arc welding	Knowledge and Application	6	the third
Reports, theoretical,	Whiteboard, PowerPoint	Types of welding electrodes	Knowledge and	6	Fourth

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Performing welding joints	Knowledge and Application	6	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Welding defects and their treatment	Knowledge and Application	6	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical applications of welding	Knowledge and Application	6	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to Refrigeration	Knowledge and Application	6	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Measurement and planning	Knowledge and Application	6	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	manual cutting operations	Knowledge and Application	6	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	flat grinding	Knowledge and Application	6	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Corner grinding wheel	Knowledge and Application	6	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Holes and finishing	Knowledge and Application	6	thirteenth
Reports, theoretical,	Whiteboard, PowerPoint	Implementing a practical piece	Knowledge and	6	fourteenth

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Review and practical test	Knowledge and Application	6	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Fundamentals of engineering workshops and mechanical laboratories. Principles of welding and practical metalworking.	Required textbooks (curriculum books, if available)
Books on welding and metalworking technology. Books on mechanical workshop operations and measurements.	Main references (sources)
Engineering journals specializing in manufacturing and welding. Technical reports on occupational safety in workshops. Applied research in the field of employment.	Recommended books and references (scientific journals and reports...)
Engineering and technical education websites.	Electronic references and websites

Level 1 - Semester 2

1. Course Name:
metal alloys
2. Course code:
METP125
3. Semester/Year:
Chapter Two / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Ahmed Jassim Mohammed e-mail: Ahmed.jm@ntu.edu.iq
8. Course Objectives:
After completing the course, the student becomes capable on Explanation of the basic concepts of material properties and geometric structure For the material.
9. Teaching and learning strategy:
_ Theoretical learning: Explaining basic concepts using presentations. _ Practical learning: Laboratory experiments (testing hardness, tensile strength, microstructure). _ Interactive learning: classroom discussions and questions.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Hardness test and its types	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Impact and durability test	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Fatigue and exhaustion test	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Creep test in metals	Knowledge and Application	2	Fourth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Microscopic examination of minerals	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Preparing metal samples for inspection	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Metallic balance diagrams	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Iron-carbon diagram	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Phases and transformations in steel	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Heat treatment of metals	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Fermentation and normalization	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Hardening and review	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Corrosion and its causes	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Methods of protecting metals from corrosion	Knowledge and Application	2	fourteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	General review and discussion of industrial applications and final exam	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Modern Physical Metallurgy and Materials Engineering	Required textbooks (curriculum books, if available)
A Textbook of Material Science and Metallurgy	Main references (sources)
Wiley Publishing	Recommended books and references (scientific journals and reports...)
Springer Physical Metallurgy Materials Science	Electronic references and websites

1. Course Name:
kinematics
2. Course code:
METP121
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Nour Abdel Latif Ezzat e-mail: noor.ae@ntu.edu.iq
8. Course Objectives:
_ To become familiar with the basic concepts of kinesiology. _ Understanding the types of linear and circular motion. _ Calculating the displacement, speed, and acceleration of moving objects. _ Applying mathematical and mechanical laws to solve problems.
9. Teaching and learning strategy:
_ The scientific lecture and theoretical explanation. _ Solving problems and practical applications. _ Cooperative learning within groups. _ Discussion and asking questions during the lecture.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Dynamics	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Kinds of Motion	Knowledge and Application	4	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Kinds of Motion	Knowledge and Application	4	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Newton's Second Law	Knowledge and Application	4	Fourth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Newton's Second Law	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Work	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Power	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Energy	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Strength of Materials	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Strength of Materials	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Normal stress due to an axial load on Uniform Cross section area	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Similarity Principle	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Similarity Principle	Knowledge and Application	4	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Shear Stress	Knowledge and Application	4	fourteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Shear Stress	Knowledge and Application	4	fifteenth

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

12. Learning and teaching resources	
Principles of Motion Mechanics	Required textbooks (curriculum books, if available)
Books on engineering mechanics and kinematics	Main references (sources)
Mechanical Engineering Journals	Recommended books and references (scientific journals and reports...)
Coursera	Electronic references and websites

1. Course Name:
Mathematics/2
2. Course code:
TIMO111
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Hussein Ali Ahmed hussein.aa@ntu.edu.iq e-mail:
8. Course Objectives:
1_Cognitive objectives: _Understanding the concept of indefinite integration and the integration of a function (indefinite integral). _Understanding the fundamental relationship between integration and differentiation (the fundamental theory of differentiation and integration). _ Identifying the different integration methods (by substitution, by parts, and by fractions). _Understanding definite integrals as volume or area. 2_Skill-based (applied) objectives: _The ability to calculate definite and indefinite integrals for different countries. _Calculating the areas under curves and between two curves.
9. Teaching and learning strategy:
1_ Introduction: Linking integration to differentiation (an inverse relationship) and presenting the concept in a realistic context. 2_ Exploration: Giving students the opportunity to deduce the rules of integration themselves (active learning). 3_ Explanation and discussion: Using the developed lecture to clarify the precise concepts and different integration methods. 4_ Application: Assigning students to solve various exercises and engineering and physics applications. 5_ Assessment: Use formative (short tests) and summative assessment to measure understanding, not memorization.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	General review of the topic of derivatives and their applications	Knowledge and Application	2	the first
Reports,	Whiteboard,	Integration: Definition, Uses,	Knowledge	2	the second

theoretical, oral, and written exams	PowerPoint slides, practical experiments	and Types	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Indefinite integrals/Rules for integrating roots/Integrating polynomial functions	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Integration of exponential and rational functions	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Integration of trigonometric functions	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve various exercises for different types of integration.	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Definite integration	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Graphing functions	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Finding areas using integration	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple exercises on the topic of graphing functions to find the areas under a curve.	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Finding volumes using integration and graphing functions	Knowledge and Application	2	eleventh
Reports,	Whiteboard,	Solving multiple exercises on	Knowledge	2	twelfth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	the topic of volumes	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Assessment exam	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	LnIntegral of a function	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	A general review of the topic of integration and its applications from the beginning to the last topic	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Differential and Integral Calculus	Required textbooks (curriculum books, if available)
Differential and Integral Calculus / Professor Abdelsalam Mohamed	Main references (sources)
Calculus Thomas1 Calculus Thomas11	Recommended books and references (scientific journals and reports...)
Google Chrome browser Firefox browser Opera browser	Electronic references and websites

1. Course Name:
Sports
2. Course code:
NTU104
3. Semester/Year:
Chapter Two_ 2025/2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
15 hours of theory + 15 hours of practical work / 2 units
7. Name of the course coordinator
Name: Bassam Ali Hamad e-mail: bassam.ali@ntu.edu.iq
8. Course Objectives:
_Delivering mathematical information, knowledge, and skills to students at different educational levels. _Innovation, careful observation, planning, criticism and comparison in physical education lessons and activities at school. _Applying various assessment methods to monitor and develop the school sports program and ensure that its objectives are achieved. _Understanding the role of physical education, motor activities and sports in establishing and consolidating social traditions and customs.
9. Teaching and learning strategy:
_Practical training and regular exercise. _Cooperative learning and teamwork. _Participating in sports activities and competitions. Developing physical and motor skills.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Sports: Definition, Importance, and Types	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The mechanism of human body movement	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Common sports injuries	Knowledge and Application	2	the third

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic skills of volleyball	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	International rules of basketball	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic skills of table tennis and its international rules	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic skills of volleyball and its international rules	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	swimming	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic skills of tennis and its international rules	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic skills of handball	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	International rules of handball	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Track and field games (types, international rules of the game)	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Basic football skills	Knowledge and Application	2	thirteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Sports Competitions and Events Management	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Sports laws and regulations	Knowledge and Application	2	fifteenth

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

12. Learning and teaching resources	
Basics of mathematics. Techniques, Tactics, and Training. Michael Brendle and John Sobieski 2017. Sports. Mahmoud Abu Naim 2022.	Required textbooks (curriculum books, if available)
Principles of Sports Science and Physical Fitness. Brennan Scott 2018.	Main references (sources)
Principles of Statistical Analysis in Sports. Dr. Dawood Al-Mawla, 2019.	Recommended books and references (scientific journals and reports...)
Noor Library for downloading free books	Electronic references and websites

1. Course Name:
Plumbing
2. Course code:
METP123
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
15 hours of theory + 15 hours of practical work / 4 units
7. Name of the course coordinator
Name: Asmaa Munim Abdullah e-mail: asmaamuneam@ntu.edu.iq
8. Course Objectives:
_ To provide the student with the basic knowledge of plumbing and welding processes. _ Training the student to use plumbing and welding tools and equipment safely and effectively. _ Informing the student about the defects that appear and how to address them. _ Distinguishing between types of molds, castings, and their materials. _ Explaining the concept of casting and the importance of the process in industry. _ Identifying the components and materials of smelting furnaces. A statement of the types of welding processes and their different forms. _ Implementing procedures in plumbing and welding workshops. _ Detection and analysis of defects resulting from plumbing and welding.
9. Teaching and learning strategy:
_ Practical learning within workshops and laboratories. _ Training on the use of plumbing tools and equipment. _ Collaborative learning during the implementation of practical applications. _ Linking the theoretical aspect to industrial applications. _ Following occupational safety procedures during work.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Plumbing	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Definition of plumbing and types of plumbing	Knowledge and Application	4	the second

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Advantages of the plumbing process	Knowledge and Application	4	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	sand casting	Knowledge and Application	4	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Properties of sand casting	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Components of foundry sand	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Mixing sand	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Metal smelting	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Steps for melting metal	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Metal smelting furnaces	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Explanation of the types of ovens and the characteristics of each oven	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Castings	Knowledge and Application	4	twelfth

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Cleaning castings	Knowledge and Application	4	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Steps for cleaning castings	Knowledge and Application	4	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Casting inspection	Knowledge and Application	4	fifteenth

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

12. Learning and teaching resources	
Manufacturing processes for engineering materials _ kalpakjian	Required textbooks (curriculum books, if available)
Plumbing and Forming Books	Main references (sources)
Scientific journals specializing in casting and metallurgy	Recommended books and references (scientific journals and reports...)
ASM International The metal casting	Electronic references and websites

1. Course Name:
3D engineering drawing
2. Course code:
METP127
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
45 working hours / 3 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail:najmmolan@ntu.edu.iq
8. Course Objectives:
_ To equip students with skills using the programAutoCADIn preparing two-dimensional and three-dimensional engineering drawings according to approved technical standards. _Developing students' ability to use AutoCAD to execute, modify, and produce engineering plans accurately and efficiently.
9. Teaching and learning strategy:
_Interactive lecture explaining engineering drawing concepts and applications AutoCAD. _Practical, applied learning through laboratory exercises and individual projects to develop design skills.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	A practical review of commands for drawing geometric solids	Knowledge and Application	3	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing simple elementary models and their practical applications	Knowledge and Application	3	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Creating composite objects using modeling commands	Knowledge and Application	3	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applying drag, rotate, and shape commands to 3D objects	Knowledge and Application	3	Fourth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Geometric manipulation operations for solids (addition, subtraction, intersection)	Knowledge and Application	3	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Using relative and polar coordinates in 3D drawing	Knowledge and Application	3	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Understanding the coordinate system User (UCS) and its applications	Knowledge and Application	3	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Moving, rotating, and changing drawing levels using UCS	Knowledge and Application	3	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing objects on multiple levels using UCS	Knowledge and Application	3	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Geometric projections and isometric perspective of solids	Knowledge and Application	3	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing sections and faces of geometric solids	Knowledge and Application	3	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Advanced applications on complex models	Knowledge and Application	3	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Comprehensive practical exercises on transferring coordinates and drawing composite models	Knowledge and Application	3	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides,	Implementing an applied project using AutoCAD To draw a complete geometric	Knowledge and Application	3	fourteenth

written exams	practical experiments	model			
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Comprehensive review and final practical test	Knowledge and Application	3	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

3D Engineering Drawing Books / Abdul Rasoul Abdul Hussein and Abdul Rasoul Al-Khaffaf	Required textbooks (curriculum books, if available)
Engineering drawing book	Main references (sources)
Engineering journals specializing in design and engineering drawing	Recommended books and references (scientific journals and reports...)
AutoCAD official website Solidworks	Electronic references and websites

1. Course Name:
Arabic
2. Course code:
NTU103
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Jaafar Sami Saleh gafaral0000@gmail.com-mail:
8. Course Objectives:
_ The main goal of the Arabic language is for students to be able to speak their language. _ Arabicization in conversation and writing. _ Getting acquainted with Arab culture and its vast heritage. _ Studying some famous texts and literary pieces in Arabic literature. _ Studying the rules of correct writing and spelling.
9. Teaching and learning strategy:
_ Developing students' skills in reading, writing, and proper expression. _ Developing their ability to use the Arabic language in scientific and professional communication within the educational and technical environment.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The concept of linguistic errors, rules for writing the closed and open "taa"	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The long and short alif, the sun letters and the moon letters	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	ظ and ضThe letters	Knowledge and Application	2	the third
Reports, theoretical,	Whiteboard, PowerPoint	Writing the hamza al-wasl, hamza al-gat', hamza al-	Knowledge and	2	Fourth

oral, and written exams	slides, practical experiments	medial, and hamza al-attar.	Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	punctuation marks	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Noun and verb, and the difference between them	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Objects (direct object, absolute object, object of purpose, object of time, object of accompaniment)	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	number	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applications of linguistic errors	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applications of linguistic errors	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Meanings of prepositions, the rule of the alif al-farqah, the rule of nun and tanween	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The formative aspects of administrative discourse	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The language of administrative discourse	Knowledge and Application	2	thirteenth
Reports, theoretical,	Whiteboard, PowerPoint	The language of administrative discourse	Knowledge and	2	fourteenth

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Comprehensive review of the material	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Basic rules in the Arabic language - Muhammad Hussein Al-Masoumi 2008.	Required textbooks (curriculum books, if available)
Introduction to Arabic Linguistics - Abdullah Al-Tai 2015. Contemporary Arabic Literature - Muhammad Muhammad Hussein, 2010	Main references (sources)
Arabic Grammar Level One - Abdul Rahman Al-Fawzan 2016.	Recommended books and references (scientific journals and reports...)
Dor Library for downloading free books.	Electronic references and websites

1. Course Name:
Advanced laboratories
2. Course code:
METP128
3. Semester/Year:
Chapter Two / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence
6. Number of credit hours (total) / Number of units (total)
90 practical hours / 6 units
7. Name of the course coordinator
Name: Ahmed Jassim Mohammed e-mail: Ahmed.jm@ntu.edu.iq
8. Course Objectives:
_ To learn about woodworking tools and equipment and their uses. _ Implementing occupational safety procedures within workshops. _ Performing basic woodworking work accurately and skillfully. _ Using measuring, cutting, and finishing tools correctly. _ Identifying the risks of working inside workshops and ways to prevent them. _ Developing students' practical skills and teamwork. _ Maintaining tools and equipment and following technical instructions.
9. Teaching and learning strategy:
_ Theoretical explanation and practical application within the workshop. _ Learning by doing and direct training. _ Using educational models and tools. _ Collaborative learning within work groups. _ Discussion and asking questions during the application. _ Continuous evaluation of practical performance.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to Carpentry	Knowledge and Application	6	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Safety in carpentry work	Knowledge and Application	6	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Measurement and planning tools	Knowledge and Application	6	the third

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	manual cutting operations	Knowledge and Application	6	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Assembly and installation	Knowledge and Application	6	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Finishing and sanding	Knowledge and Application	6	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Implementing a practical model	Knowledge and Application	6	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to Plumbing	Knowledge and Application	6	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Plumbing tools	Knowledge and Application	6	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of pipes and fittings	Knowledge and Application	6	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Measurement and cutting operations	Knowledge and Application	6	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Binding and fixing operations	Knowledge and Application	6	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Binding and fixing operations	Knowledge and Application	6	thirteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Fault detection and maintenance	Knowledge and Application	6	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical application and testing	Knowledge and Application	6	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

Level Two - First Semester

1. Course Name:
computer
2. Course code:
NTU201
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
15 hours of theory + 15 hours of practical work / Number of units: 2
7. Name of the course coordinator
Name: Nour Ezzat Abdel Latif e-mail: noor.ae@ntu.edu.iq
8. Course Objectives:
_ The student's tasks include working with different computer applications, being able to distinguish between the types of software that can be dealt with, learning about _artificial intelligence, its prospects for dealing with it, and how to benefit from it in all areas of life.
9. Teaching and learning strategy:
_Developing students' skills in using computers and application programs related to technical and mechanical disciplines. _ Enhancing the ability to deal with modern technologies in the engineering field.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Security and networks: What is a network? Types of networks – Basic network components – Fundamentals of network security – Understanding network threats – Network troubleshooting and repair.	Knowledge and Application	2	the first
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	E-commerce: Concepts of electronic banking services, which include internet banking services: ATM and debit card services, telephone banking services, SMS banking services, electronic alerts, and mobile banking services.	Knowledge and Application	2	the second
Reports, assignments,	Whiteboard, PowerPoint	E-commerce: Concepts of electronic banking services,	Knowledge and Application	2	the third

written, oral, and written exams	slides, conducting laboratory experiments	which include internet banking services: ATM and debit card services, telephone banking services, SMS banking services, electronic alerts, and mobile banking services.			
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Computer Troubleshooting: Identifying and resolving common hardware and software problems encountered by computer users. Essential troubleshooting techniques and tools for diagnosing and fixing issues.	Knowledge and Application	2	Fourth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Computer Troubleshooting: Identifying and resolving common hardware and software problems encountered by computer users. Essential troubleshooting techniques and tools for diagnosing and fixing issues.	Knowledge and Application	2	Fifth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Introduction to Artificial Intelligence: Definition of Artificial Intelligence, History of Artificial Intelligence, Artificial Intelligence Technologies and Methodologies, Challenges and Ethical Considerations	Knowledge and Application	2	Sixth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Introduction to Artificial Intelligence: Definition of Artificial Intelligence, History of Artificial Intelligence, Artificial Intelligence Technologies and Methodologies, Challenges and Ethical Considerations	Knowledge and Application	2	Seventh
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Artificial intelligence in our daily lives: AI in smartphones and virtual assistants such as Siri or Google Assistant.	Knowledge and Application	2	Eighth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides,	Artificial intelligence in our daily lives: AI in smartphones and virtual	Knowledge and Application	2	Ninth

and written exams	conducting laboratory experiments	assistants such as Siri or Google Assistant.			
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Artificial intelligence applications: education, healthcare, finance, transportation, marketing, and advertising.	Knowledge and Application	2	tenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Artificial intelligence applications: education, healthcare, finance, transportation, marketing, and advertising.	Knowledge and Application	2	eleventh
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Artificial Intelligence and Society: (How artificial intelligence affects social relations, artificial intelligence and international relations, and artificial intelligence and the future of humanity).	Knowledge and Application	2	twelfth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Artificial Intelligence and Society: (How artificial intelligence affects social relations, artificial intelligence and international relations, and artificial intelligence and the future of humanity).	Knowledge and Application	2	thirteenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	Ethical challenges in artificial intelligence (AI ethics, privacy, surveillance, and the impact of AI on the labor market).	Knowledge and Application	2	fourteenth
Reports, assignments, written, oral, and written exams	Whiteboard, PowerPoint slides, conducting laboratory experiments	The Future of Artificial Intelligence (Future Trends in Artificial Intelligence, Modern Research and Emerging Technologies).	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020) Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020).	Required textbooks (curriculum books, if available)
Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024)	Main references (sources)
Al-Khader Ali Al-Khader, Researcher, "Computer Fundamentals" 2016. Dr. Adel Abdel Nour, Introduction to the World of Artificial Intelligence, 2005.	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
English language
2. Course code:
NTU200
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Hussein Ahmed Ali e-mail:hussein.aa@ntu.edu.iq
8. Course Objectives:
_Developing basic language skills: mastering listening, speaking, reading, and writing in a balanced way to achieve high communication efficiency. _Effective communication:To enable the student to express his thoughts and opinions clearly and to understand spoken and written texts in diverse contexts.
9. Teaching and learning strategy:
_Using visual and technological teaching aids to simplify grammar and vocabulary. _Providing a safe and comfortable learning environment that encourages speaking without fear of making mistakes. _Focus on the four skills (listening, speaking, reading, writing) in a balanced way. _Linking vocabulary words to real-life sentence contexts instead of memorizing isolated lists.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction and Fundamentals of the English Language and Curriculum Vocabulary	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Rules of nouns. Verb rules rules for addings - ing – Addition rules	Knowledge and Application	2	the second

	experiments	ed – Addition rules			
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	pronouns	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	auxiliary verbs	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Verb rules	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Rules of names	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Rules of attributes	Knowledge and Application	2	twelfth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solve multiple-choice questions	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical applications	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	exammid-term	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Headway-beginner student's book	Required textbooks (curriculum books, if available)
Headway-beginner student's book English Course/ Omar AL-Hourani English Grammar/ Betty Schramper Azar	Main references (sources)
	Recommended books and references (scientific journals and reports...)
Google Chrome browser Firefox browser Opera browser http://www.expenglish.com/vb An AZ of English Grammar & Usage - Geoffrey Leech. http://www.englishpage.com/	Electronic references and websites

1. Course Name:
Crimes of the Ba'ath regime in Iraq
2. Course code:
NTU203
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Imad Talafah e-mail: emad.tlafah@tu.edu.iq
8. Course Objectives:
_ The main objective of the crime course is for students to learn about the tragic history caused by the Ba'ath Party in Iraq. _ Introducing students to the types of crimes and their countless numbers. _ Raising awareness among rising generations about the devious methods of the Ba'athist tyrannical regime. _ StudyThe motives behind the Ba'ath Party's crimes against the people. _ Studying the Ba'ath Party's political, administrative, and military trajectory
9. Teaching and learning strategy:
_ Enhancing students' awareness of historical events and violations that society has been subjected to. _ Developing the values of human rights, justice, and respect for the law. _ Encouraging critical thinking and objective analysis of historical events.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	TerminologyBasic	Knowledge and Application	2	the first
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	dateThe emergence of the Ba'ath Party in Iraq.	Knowledge and Application	2	the second
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	TypesThe crime	Knowledge and Application	2	the third
Reports, written, oral,	whiteboard, PowerPoint	ReasonsCrimes and their motives	Knowledge and Application	2	Fourth

and mid-term and semester exams	slides				
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	The perpetrators of the Ba'athist crimes and its oppressive leadership	Knowledge and Application	2	Fifth
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	The United Nations' view of Ba'athist crimes	Knowledge and Application	2	Sixth
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	rightsMan and the crimes of the Ba'ath	Knowledge and Application	2	Seventh
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	Baath regime human rights violations	Knowledge and Application	2	Eighth
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	Crimesmilitary	Knowledge and Application	2	Ninth
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	CrimesPolitical	Knowledge and Application	2	tenth
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	CrimesEconomic	Knowledge and Application	2	eleventh
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	CrimesCivil	Knowledge and Application	2	twelfth
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	Crimesocial	Knowledge and Application	2	thirteenth
Reports, written, oral,	whiteboard, PowerPoint	crimesgenocide	Knowledge and Application	2	fourteenth

and mid-term and semester exams	slides				
Reports, written, oral, and mid-term and semester exams	whiteboard, PowerPoint slides	Review the lectures comprehensively.	Knowledge and application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

	Required textbooks (curriculum books, if available)
SaddamHussein: The Origins, History, and Crime - Abu Salam Abdullah, 1990. SendSaddam: A View from Inside an Authoritarian Regime, Youssef Sasson, 2015.	Main references (sources)
	Recommended books and references (scientific journals and reports...)
locationThe United Nations Human Rights Organization.	Electronic references and websites

1. Course Name:
Principles of machine parts
2. Course code:
METP210
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Nour Ezzat Abdel Latif e-mail: noor.ae@ntu.edu.iq
8. Course Objectives:
_ Students learn how to analyze different mechanical components using principles of physics and mathematics, such as loads, forces, pressures, and moments. _ Students learn how to select the right materials for each application, while providing the optimal balance between reliability, cost, and performance.
9. Teaching and learning strategy:
_ Theoretical and practical lectures _ brainstorming _ critical thinking _ linguistic communication _ Discussion and dialogue

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Review of strength of materials	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Riveted joints	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Riveted joints	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Screw joints	Knowledge and Application	2	Fourth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Screwed joints	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of bolts for power transition	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Welded joints	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Welded joints	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Welded joints	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Keyed joints	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Keyed joints	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Frictional Clutches	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Frictional Clutches	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides,	Frictional Clutches	Knowledge and Application	2	fourteenth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of Springs	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Shigley's Mechanical Engineering Design	Required textbooks (curriculum books, if available)
Shigley's Mechanical Engineering Design	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Geometric tolerance
2. Course code:
METP212
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Asmaa Munim Abdullah e-mail: asmaamuneam@ntu.edu.iq
8. Course Objectives:
_ Definition of manufacturing processes. _ Knowledge of engineering tolerances, tolerances, and compatibility. _ Definition of measuring and cutting tools and what they produce in terms of chips and their types. _ A detailed explanation of the lathe machine, the operations that can be performed on it, and all calculations. To accomplish that
9. Teaching and learning strategy:
_ Practical learning using engineering drawings. _ Training in reading geometric symbols and measurements. _ Solving practical exercises related to tolerances and compatibility. _ Linking the theoretical aspect with industrial applications and practical workshops. _ Using measuring devices and testing tools.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Geometric tolerances, couplers, coupler systems, tolerance orders, coupler units, fundamental deviations	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of tolerances, hole foundation system, column foundation system, duplication symbols, tolerances for free dimensions, detailed duplications, selection of duplications and their economic advantages	Knowledge and Application	4	the second
Reports, theoretical,	Whiteboard, PowerPoint	Geometric tolerances in shape and position, and	Knowledge and	4	the third

oral, and written exams	slides, practical experiments	types of shape and position tolerances	Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Measurement parameters, measurement parameter design, types of measurement parameters (internal measurement parameters, external measurement parameters, adjustable measurement parameters, rigid measurement parameters, special measurement parameters))	Knowledge and Application	4	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Metal fabrication classification, metalworking, introduction to chip formation theory The influencing factors include workpiece fixing methods (including round and non-round), cutting edges used, and longitudinal and transverse feed arrows.	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Identifying the tools used and how to secure them to the workpieces; lathe tools for shaping..	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Understanding lathe tool angle types, the effect of lathe tool angles on the cutting process, types of lathe tool metals, cutting conditions, and cutting elements.	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Applications of cutting speeds, use of speed tables and charts, classification of cutting tools according to operating methods and number of cutting edges	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	How to perform a process card for a group of operations, calculate its components, and calculate the cut time for each operation.	Knowledge and Application	4	Ninth
Reports,	Whiteboard,	How to utilize the sequence	Knowledge	4	tenth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	card to create a product path through different units. Factors affecting the choice of cutting speed (1. The effect of the cutting tool properties). 2_ The effect of operating elements 3_ Effect of the properties of the machined metal)	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Automatic turret lathes: a study of the operations that can be performed and an analysis of the processes on the product; how to prepare operating cards..	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of tools used and their arrangement on the front and back hexagonal and quadruple heads	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	A study of how to program automated CNC lathes and the factors affecting the operating steps.	Knowledge and Application	4	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Number of operating cards covering all cutting operations	Knowledge and Application	4	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	How to create an operating card for a group of operations, calculate its components, and calculate the time for each operation.	Knowledge and Application	4	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

	Required textbooks (curriculum books, if available)
_Metal Manufacturing Processes 2 by Osama Mohamed Al-Mardi Suleiman Ismaila SO, "Manufacturing Science and Technology", Department of Mechanical Engineering, College of Engineering, University of Agriculture,	Main references (sources)

Abeokuta, (2012).	
	Recommended books and references (scientific journals and reports...)
Mit open courseware Autodesk education	Electronic references and websites

1. Course Name:
Initial operating workshops
2. Course code:
METP214
3. Semester/Year:
Chapter One / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence
6. Number of credit hours (total) / Number of units (total)
90 practical hours / 6 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail:najmmolan@ntu.edu.iq
8. Course Objectives:
_To equip students with the skills to use hand tools and measuring devices. _Training students on operating lathes, milling machines, and drilling machines. _Developing accuracy and measurement skills during the execution of mechanical parts. _Applying occupational safety rules within the workshop. _Developing students' ability to carry out operational tasks according to engineering plans
9. Teaching and learning strategy:
_Theoretical lecture _Practical training within the workshop _Learning by observation and direct application _Collaborative learning within groups _Using illustrative aids and practical models

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to operational workshops and occupational safety	Knowledge and Application	6	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Identifying hand tools and their uses	Knowledge and Application	6	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Precision measuring devices and methods of using them	Knowledge and Application	6	the third

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Measurement, filing, and cutting operations	Knowledge and Application	6	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basics of drilling and punching	Knowledge and Application	6	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to the drilling machine and practical training	Knowledge and Application	6	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Fundamentals of turning and types of its operations	Knowledge and Application	6	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical training on a lathe machine	Knowledge and Application	6	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	leveling and precision machining operations	Knowledge and Application	6	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basics and types of milling	Knowledge and Application	6	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical training on a milling machine	Knowledge and Application	6	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Internal and external threading operations	Knowledge and Application	6	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Implementing a simple practical project within the workshop	Knowledge and Application	6	thirteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Maintenance of tools and machinery and workshop organization	Knowledge and Application	6	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	General review, practical and final exam	Knowledge and Application	6	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Fundamentals of mechanical processing operations.	Required textbooks (curriculum books, if available)
_ Fundamentals of mechanical machining operations. _ Engineering workshop technology. _ Principles of machine operation.	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Principles of Mineralogy
2. Course code:
METP216
3. Semester/Year:
2025/2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Ahmed Jassim Mohammed e-mail: Ahmed.jm@ntu.edu.iq
8. Course Objectives:
_After completing the course, the student will be able to Explanation of the basic concepts of mineralogy and materials engineering _Distinguishing between the different types of crystal structures of minerals Explanation of the effect of crystal defects on mechanical properties.
9. Teaching and learning strategy:
_Brainstorming and ongoing collaboration Daily tests, teaching, learning, and continuous assessment.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to Metallurgical Engineering and Properties of Metallic Materials	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Atomic structure and metallic bonds	Knowledge and Application	4	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Crystal unit and types of crystal structures	Knowledge and Application	4	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Crystal defects and dislocations	Knowledge and Application	4	Fourth
Reports,	Whiteboard,	Twining and slippage	Knowledge	4	Fifth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	phenomenon in metals	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Mechanical properties of metals	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Stress and tension test	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Hardness testing and its types	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Impact and durability testing	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Microscopic examination of minerals and sample preparation	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Granule growth and microstructure	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Corrosion and types of rust in metals	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Heat treatment of metals	Knowledge and Application	4	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Iron and steel alloys and their classification	Knowledge and Application	4	fourteenth
Reports,	Whiteboard,	Industrial applications and	Knowledge	4	fifteenth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	quality control testingFor metals	and Application		
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11. Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12. Learning and teaching resources	
Modern Physical Metallurgy and Materials Engineering	Required textbooks (curriculum books, if available)
A Textbook of Material Science and Metallurgy	Main references (sources)
Wiley Publishing	Recommended books and references (scientific journals and reports...)
Physical Metallurgy Materials Science	Electronic references and websites

1. Course Name:
Principles of Industrial Drawing
2. Course code:
METP218
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
45 hours of practical work / 3 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail:najmmolan@ntu.edu.iq
8. Course Objectives:
_ To equip students with the basic principles of reading and drawing industrial plans and drawings according to approved technical standards. _Developing skills in representing industrial parts and models and preparing accurate drawings for engineering and applied uses.
9. Teaching and learning strategy:
_ The interactive lecture is supported by illustrative aids to explain the basics of industrial drawing, symbols, and engineering standards. _ Learning through practical application via classroom exercises and experiential activities to develop skills in accurately reading and executing industrial drawings.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to Industrial Drawing and its Importance in Engineering and Applied Fields	Knowledge and Application	3	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of lines in industrial drawing and their standard uses	Knowledge and Application	3	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Scales, their types, and how to apply them in drawings	Knowledge and Application	3	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Dimensions and rules for placing dimensions in technical drawings	Knowledge and Application	3	Fourth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Industrial symbols used in engineering drawings	Knowledge and Application	3	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing basic geometric projections (front, top, side)	Knowledge and Application	3	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Geometric projections and their types (first, third)	Knowledge and Application	3	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Representing simple objects in multiple projections	Knowledge and Application	3	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Sectors, their types, and how to draw them	Knowledge and Application	3	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Partial and complete sections and their applications in industrial drawing	Knowledge and Application	3	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing isometric perspectives of simple objects	Knowledge and Application	3	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Hatching and its applications in clarifying materials and sectors	Knowledge and Application	3	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Reading and analyzing ready-made industrial drawings	Knowledge and Application	3	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Comprehensive practical applications of drawing projections, sections, and perspectives	Knowledge and Application	3	fourteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	General review and final practical evaluation	Knowledge and Application	3	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Engineer: Youssef Al-Radi Book: Yusuf Hussein Al-Radi, Badi' Nazir	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Industrial Management
2. Course code:
METP222
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Hussein Ahmed e-mail:hussein.aa@ntu.edu.iq
8. Course Objectives:
_Leadership and management skills in factory and company management. _Technical skills in analyzing and studying industrial processes. _Reconciling technology with administrative work.
9. Teaching and learning strategy:
_Case study Analyzing real-life situations from factories to train students in making administrative decisions. _Problem-based learning:Students are presented with industrial problems (such as a production line breakdown) and they find innovative solutions to them. _Cooperative learning:Dividing students into groups to complete projects enhances communication and leadership skills.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Administration Management characteristics	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Stages of management development	Knowledge and Application	2	the second

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic principles of management	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	theJobAdministrative functions	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Industrial Management	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Functions and tasks of industrial management	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Industrial Engineering	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Location and layout of the industrial unit 1. the site 2. Order	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Feasibility study for industrial projects	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Production planning Types of production	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Study of work and standard time for industrial processes	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Maintenance management and planning Maintenance cost analysis	Knowledge and Application	2	twelfth

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Training	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Wages	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Purchases Inventory management and control	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Lectures in Industrial Management	Required textbooks (curriculum books, if available)
Book of Management and Occupational Safety/M. Mustafa Muhammad Hassan – Jordan The Book of Industry and Manufacturing / Paul Kobasa Industrial Management / Mohammed Al-Qateh	Main references (sources)
Articles and reports on industrial management	Recommended books and references (scientific journals and reports...)
Google Chrome browser Firefox browser Opera browser	Electronic references and websites

1. Course Name:
Welding operations
2. Course code:
METP223
3. Semester/Year:
Chapter One / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Yasser Ayad Taha e-mail: Yasser.ayad@ntu.edu.iq
8. Course Objectives:
Upon completing the first course, the trainee will be able to: _ Safety rules apply. _ It defines the uses and importance of welding.. _ identifies types of welding. _ To determine the types of joints, welding positions, and movements. _ It works on measurement and planning tools and methods of using them. _ It works on basic machinery, equipment, and work methods.. _ It works on manual tools and methods of use.
9. Teaching and learning strategy:
_ A device for displaying image slides, educational slides, and training models..

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Unit 1 / Chapter 1 Welding basics Welding fundamentals	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	welding joints Weld joints	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Welding positionsWelding position	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	welding movementsWelding movements	Knowledge and Application	2	Fourth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chapter TwoY Safety controlsSafety rules	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Exercises and questions for Unit 1	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	First semester midterm exam	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Unit Two / Chapter One Electron beam welding	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Advantages and applications Electron beam welding	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chapter Two For plasma welding (Plasma Arc Welding – PAW)	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Advantages and applications For plasma welding (Plasma Arc Welding - PAW)	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chapter Three Robotic welding and artificial intelligence(Robotic & AI Welding)	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Technologies and machinery used Robotic welding and artificial intelligence(Robotic & AI Welding)	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and	Whiteboard, PowerPoint slides,	Advantages and applications Robotic welding and artificial intelligence(Robotic & AI	Knowledge and Application	2	fourteenth

written exams	practical experiments	Welding)			
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Exercises and questions for Unit Two	Knowledge and Application	2	fifteenth

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

12. Learning and teaching resources	
_Metal manufacturing processes Welding Workshop Notebook	Required textbooks (curriculum books, if available)
Welding Technology Book The Welding Book	Main references (sources)
Modern Workshops Encyclopedia Book Series	Recommended books and references (scientific journals and reports...)
https://www.instructables.com/Learning-to-Weld/	Electronic references and websites

Level Two - Semester Two

1. Course Name:
Professional ethics
2. Course code:
NTU204
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Hussein Ahmed Ali e-mail:hussein.aa@ntu.edu.iq
8. Course Objectives:
Enhancing the student's ability to distinguish between ethical and unethical behavior.
9. Teaching and learning strategy:
_Cooperative learning:Teamwork to analyze ethical issues and develop social and professional skills. _Self-learning and research:Students are tasked with researching professional ethics charters (such as the Engineers Syndicate Code). _ Teaching based on example:The teacher is committed to embodying ethical values in his behavior, thus practically instilling those values in the students..

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Ethics (concept - origin) Sources of ethics	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	General rulesFor ethics	Knowledge and Application	2	the second
Reports, theoretical,	Whiteboard, PowerPoint	moral values	Knowledge and	2	the third

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The importance of ethics in the individual and society	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Work and career	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The difference between the concepts of work, profession, and craft	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Standards that the profession should be based on	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Professional ethics or conduct and the positive benefits of adhering to them	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	featuresEthicsthe job	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Values and professional ethics	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Values and professional ethics	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Requirements and benefits of mastering the work	Knowledge and Application	2	twelfth
Reports, theoretical,	Whiteboard, PowerPoint	Unethical behavior patterns in the profession	Knowledge and	2	thirteenth

oral, and written exams	slides, practical experiments		Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Ethics of practicing engineering professions	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic rules of the code of ethics for the engineering profession	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Professional ethics Lecture file	Required textbooks (curriculum books, if available)
Professional Ethics Lectures / Al-Mustansiriya University Professional Ethics Lectures / University of Anbar	Main references (sources)
Various articles on engineering ethics	Recommended books and references (scientific journals and reports...)
Google Chrome browser Firefox browser Opera browser	Electronic references and websites

1. Course Name:
Advanced machine parts
2. Course code:
METP211
3. Semester/Year:
Chapter Two / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Nour Abdel Latif Ezzat e-mail: noor.ae@ntu.edu.iq
8. Course Objectives:
_ Students learn how to analyze different mechanical components using principles of physics and mathematics, such as loads, forces, pressures, and moments. _ Students learn how to select the right materials for each application, while providing the optimal balance between reliability, cost, and performance.
9. Teaching and learning strategy:
_ Theoretical and practical lectures _ brainstorming _ critical thinking _ linguistic communication _ Discussion and dialogue

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Belts	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Belts	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Using artificial intelligence in belt design	Knowledge and Application	2	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of Shafts	Knowledge and Application	2	Fourth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of Shafts	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of Journal Bearings	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of Journal Bearings	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Selection of Ball Bearings	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Selection of Ball Bearings	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of gears by lewis equation	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Cams	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Gears Trains	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design of simple gearbox	Knowledge and Application	2	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides,	Design of simple gearbox	Knowledge and Application	2	fourteenth

written exams	practical experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Worm gears	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Shigley's Mechanical Engineering Design	Required textbooks (curriculum books, if available)
Shigley's Mechanical Engineering Design	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Advanced operating workshops
2. Course code:
METP215
3. Semester/Year:
Chapter Two / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence
6. Number of credit hours (total) / Number of units (total)
90 practical hours / 6 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail:najmmolan@ntu.edu.iq
8. Course Objectives:
_ Introducing students to the basics of operational workshops and their types. _ To equip students with the skills to use hand tools and measuring devices. _ Training students on how to operate lathes, milling machines and drilling machines. _ Developing accuracy and measurement skills during the execution of mechanical parts. _ Applying occupational safety rules within the workshop. _ Developing students' ability to carry out operational tasks according to engineering plans. _ Enhancing the practical and professional skills of students.
9. Teaching and learning strategy:
_ aFor the theory lecture. _ Practical training within the workshop. _ Learning by observation and direct application. _ Collaborative learning within groups. _ Discussion and asking questions. _ Using illustrative aids and practical models. _ Continuous assessment during practical application.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to Advanced Operational Workshops and Occupational Safety	Knowledge and Application	6	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Review of precision measuring instruments and calibration methods	Knowledge and Application	6	the second
Reports,	Whiteboard,	Advanced turning operations	Knowledge	6	the third

theoretical, oral, and written exams	PowerPoint slides, practical experiments		and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Machining between centers and conical turning	Knowledge and Application	6	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Cutting external and internal threads	Knowledge and Application	6	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Horizontal and vertical milling operations	Knowledge and Application	6	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Spiral milling and gears	Knowledge and Application	6	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Operating on an advanced drilling machine	Knowledge and Application	6	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Grinding processes and their types	Knowledge and Application	6	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Surface finishing and improving operational accuracy	Knowledge and Application	6	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Reading engineering plans and executing the pieces	Knowledge and Application	6	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Operating principles usingmCNC	Knowledge and Application	6	twelfth
Reports,	Whiteboard,		Knowledge	6	thirteenth

theoretical, oral, and written exams	PowerPoint slides, practical experiments	Preventive maintenance of machinery and equipment	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Implementing a comprehensive practical projectto	Knowledge and Application	6	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	General review, practical and final exam	Knowledge and Application	6	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

_ Operational Technology and Engineering Workshops. Advanced mechanical processing operations. _ Measurements and engineering workshops. Fundamentals of metalworking	Required textbooks (curriculum books, if available)
_ Operational Technology and Engineering Workshops. _ Advanced mechanical processing operations. _ Measurements and engineering workshops. Fundamentals of metalworking.	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Operations
2. Course code:
METP213
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Asmaa Munim Abdullah e-mail: asmaamuneam@ntu.edu.iq
8. Course Objectives:
_ Understanding basic operating processes. _ Exploring unconventional processes. _ Integrating artificial intelligence into industrial processes. _ Analysis and improvement of industrial efficiency. _ Preparing students for the industrial environment.
9. Teaching and learning strategy:
_ To equip students with metalworking skills. _ Identifying the types of machining machines and cutting tools. _ Developing accuracy and quality skills in production. _ Enhancing the ability to read drawings and execute mechanical parts.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Milling, types of milling machines, and milling machine parts; performing all mathematical calculations to determine cutting speed and other operating variables for the milling machine; conducting practical exercises on the milling machine for the practical component, where the student will be able to operate workpieces on the milling machine.	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Operating the milling machine, explaining its parts, how to work on it, and performing all its	Knowledge and Application	4	the second

	experiments	mathematical calculations. Performing mathematical calculations to determine cutting speed, cutting depth, operating time, and feed rate; completing various exercises on the milling machine.			
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Explanation of milling and future plans using artificial intelligence in milling operations	Knowledge and Application	4	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The diversification of artificial intelligence is of paramount importance to the future of technology and engineering applications.	Knowledge and Application	4	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Definition of a grinding machine, the tasks performed on it, and its types	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	And all the mathematical calculations necessary to calculate the variables of the process, such as time and cutting speed.	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Submitting reports and administering exams to students during the semester	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Artificial intelligence	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Defining skimming and performing all its calculations	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Defining scraping and understanding this chapter requires defining the machine, its parts, and its types.	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides,	The most important tasks that can be performed on it and all the mathematical	Knowledge and Application	4	eleventh

written exams	practical experiments	calculations necessary to find variables Operation			
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Students are tested in class and their completion of practical exercises.	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Explaining artificial intelligence and AI skimming	Knowledge and Application	4	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Non-traditional operating processes: definition, main types, and benefits in the traditional case.	Knowledge and Application	4	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Artificial intelligence in unconventional operations	Knowledge and Application	4	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Book on Metal Manufacturing Processes Books on artificial intelligence in manufacturing processes	Required textbooks (curriculum books, if available)
Book on Metal Manufacturing Processes Books on artificial intelligence in manufacturing processes	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
Heat balance diagrams
2. Course code:
METP217
3. Semester/Year:
Chapter Two - 2025/2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of the course coordinator
Name: Ahmed Jassim Mohammed e-mail: Ahmed.jm@ntu.edu.iq
8. Course Objectives:
After completing the course, the student will be able to Explanation of the basic concepts of mineralogy and thermal diagrams Distinguishing between types of crystal structures.
9. Teaching and learning strategy:
Brainstorming and ongoing collaboration Daily tests, teaching, learning, and continuous assessment

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to mineralogy and equilibrium diagrams	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	The concept of phases and metal alloys	Knowledge and Application	4	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Solubility in alloys and types of solid solutions	Knowledge and Application	4	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Rules of thermal equilibrium and the law of phases	Knowledge and Application	4	Fourth
Reports, theoretical,	Whiteboard, PowerPoint	Binary equilibrium diagrams(Binary Phase	Knowledge and	4	Fifth

oral, and written exams	slides, practical experiments	Diagrams)	Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Utility Plan(Eutectic Diagram)	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Utility Plan(Eutectic Diagram)	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Iron-carbon diagram(Fe-C Diagram)	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Phases and transformations in steel and cast iron	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to heat treatment of metals	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	fermentationAnnealing and Normalizing	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	hardening(Hardening) and (Tempering)	Knowledge and Application	4	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Surface heat treatments and treatment defects	Knowledge and Application	4	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Sample tests	Knowledge and Application	4	fourteenth
Reports, theoretical,	Whiteboard, PowerPoint	General review and discussion of industrial	Knowledge and	4	fifteenth

oral, and written exams	slides, practical experiments	applications and testingFinal	Application		
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11. Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12. Learning and teaching resources	
Modern Physical Metallurgy and Materials Engineering	Required textbooks (curriculum books, if available)
A Textbook of Material Science and Metallurgy	Main references (sources)
Wiley Publishing	Recommended books and references (scientific journals and reports...)
Springer Physical Metallurgy Materials Science	Electronic references and websites

1. Course Name:
Advanced Industrial Drawing
2. Course code:
METP219
3. Semester/Year:
Chapter Two / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
My presence, my online presence
6. Number of credit hours (total) / Number of units (total)
45 hours of practical work / 3 units
7. Name of the course coordinator
Name: Najm Abdullah Mulan e-mail:najmmolan@ntu.edu.iq
8. Course Objectives:
_Gaining studentsThe ability to represent and draw gears and sprockets In all its formsAccording to the standardsEngineeringApproved. _Development of MhArAT TAnalyze and understand the mechanisms of mechanical motion transmission and apply them accurately in industrial drawings.
9. Teaching and learning strategy:
_Interactive lecture supportedWith a theoretical explanation of the basics of gears and pinions, along with practical examples and standard drawings. _Learning by doing through exercisesDrawing gears and pinions and analyzing power transmission mechanisms in workshops or engineering laboratories.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Introduction to gears, their types, and their uses in mechanical power transmission.	Knowledge and Application	3	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Basic terms in the system(Pitch circle, gears, Module, Addendum, Dedendum)	Knowledge and Application	3	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Straight gear and its geometric drawing method	Knowledge and Application	3	the third
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	Helical gear: its properties and how to represent it	Knowledge and Application	3	Fourth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Conical gears and their drawing in different projections	Knowledge and Application	3	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Internal gears and their applications: calculating gear ratios and transmitting power between gears	Knowledge and Application	3	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Simple gear ratio calculations	Knowledge and Application	3	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Design and drawing of simple gear assemblies	Knowledge and Application	3	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Composite gears and multi-stage transmission systems	Knowledge and Application	3	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Drawing gears using standard dimensions and international standards	Knowledge and Application	3	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Analysis of the movement between gears and directions of rotation	Knowledge and Application	3	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Practical applications of drawing integrated gear systems	Knowledge and Application	3	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Advanced exercises in the design and modeling of industrial gears	Knowledge and Application	3	thirteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical	A practical project for drawing a complete mechanical gear system	Knowledge and Application	3	fourteenth

	experiments				
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Comprehensive review and final practical evaluation	Knowledge and Application	3	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Engineer: Youssef Al-Radi Book: Yusuf Hussein Al-Radi, Badi' Nazir	Required textbooks (curriculum books, if available)
	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites

1. Course Name:
processes of forming theADun
2. Course code:
METP224
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
presenceY electronic
6. Number of credit hours (total) / Number of units (total)
30 hours of theory + 30 hours of practical work / 4 units
7. Name of course coordinator:
Name: Yasser Ayad Taha e-mail:Yasser.ayad@ntu.edu.iq
8. Course Objectives:
_Introducing students to the concept of metal forming and its types. _Studying the properties of metals during forming processes. _Identifying metal forming equipment and machinery. _Equipping students with the skills to choose the appropriate shaping method. _Understanding the factors affecting the quality of the final product. _Applying occupational safety rules within workshops and laboratories. _Developing practical skills in carrying out various shaping processes.
9. Teaching and learning strategy:
_aFor theory lectures. _Practical training within workshops and laboratories. _Learning through observation and direct application. _Use of educational tools and industrial models. _Discussion and posing scientific questions. _Collaborative learning within groups. _Preparing practical reports and simple projects. _Continuous evaluation of the theoretical and practical aspects.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chapter One Solid state metal forming processes	Knowledge and Application	4	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Types of hot mechanical forming processes	Knowledge and Application	4	the second
Reports,	Whiteboard,	Types of cold mechanical	Knowledge	4	the third

theoretical, oral, and written exams	PowerPoint slides, practical experiments	forming processes	and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Molding by pressure of liquids or rubber	Knowledge and Application	4	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Theoretical exercises for the semester	Knowledge and Application	4	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	First month exam	Knowledge and Application	4	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chapter Two Metal sheet forming	Knowledge and Application	4	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Manual and mechanical shaping processes for panels	Knowledge and Application	4	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Die forming (pressing) processes	Knowledge and Application	4	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Theoretical exercises for the semester	Knowledge and Application	4	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Chapter Three New shaping techniques	Knowledge and Application	4	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Ultra-fast forming processes	Knowledge and Application	4	twelfth
Reports,	Whiteboard,	Explosive shaping operations	Knowledge	4	thirteenth

theoretical, oral, and written exams	PowerPoint slides, practical experiments		and Application		
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Theoretical exercises for the semester	Knowledge and Application	4	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Second month exam	Knowledge and Application	4	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Metal manufacturing processes 2	Required textbooks (curriculum books, if available)
Principles of metal forming processes	Main references (sources)
Fundamentals of Metal Casting bookBasics of Metal Casting Metal Sheet Forming BookFormation of metal sheets Plastics Forming BookBook of Forming Plastics	Recommended books and references (scientific journals and reports...)
https://www.makktaba.com/2013/04/Books-metal-forming-technology.html	Electronic references and websites

1. Course Name:
Arabic
2. Course code:
NTU 202
3. Semester/Year:
Chapter Two / 2025-2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Jaafar Saleh Sami e-mail: gafara10000@gmail.com
8. Course Objectives:
_The Arabic language aims to teach the rules of the Arabic language, the signs of _declension, how to parse and pronounce correctly, and how to choose appropriate _ words according to their positions in the grammatical sentences. _ Knowledge of the original and secondary grammatical markers. _ Knowledge of grammar and the miraculous nature of the QuranNew.
9. Teaching and learning strategy:
_ Developing reading, writing, and expression skills. _ Promoting the use of correct Arabic. _ Improving spelling and grammar skills.

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Subject and predicate	Knowledge and Application	2	the first
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	The verb, the subject, and the object	Knowledge and Application	2	the second
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Intransitive and transitive verbs	Knowledge and Application	2	the third
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	pronouns	Knowledge and Application	2	Fourth

Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Original and secondary diacritical marks	Knowledge and Application	2	Fifth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	The Five Verbs	Knowledge and Application	2	Sixth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Conjunctions and their meanings	Knowledge and Application	2	Seventh
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Hamzat al-Wasl and Hamzat al-Qat'	Knowledge and Application	2	Eighth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Hamzat al-Wasl and Hamzat al-Qat'	Knowledge and Application	2	Ninth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Extra letters	Knowledge and Application	2	tenth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Noon and Tanween	Knowledge and Application	2	eleventh
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Administrative discourse	Knowledge and Application	2	twelfth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	Administrative discourse	Knowledge and Application	2	thirteenth
Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	The most common linguistic errors in official documents	Knowledge and Application	2	fourteenth

Reports, assignments, written, oral, and written exams	whiteboard, PowerPoint slides	The most common linguistic errors in official documents	Knowledge and Application	2	fifteenth
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11. Course Evaluation
Student reports and activities, oral and written theoretical and practical exams

12. Learning and teaching resources	
Basic rules in the Arabic language – Muhammad Hussein Al-Masoumi 2008.	Required textbooks (curriculum books, if available)
Introduction to Arabic Linguistics – Abdullah Al-Tai 2015. Contemporary Arabic Literature – Muhammad Muhammad Hussein 2010.	Main references (sources)
Arabic Grammar Level One – Abdulrahman Al-Fawzan 2016.	Recommended books and references (scientific journals and reports...)
Noor Library for downloading free books.	Electronic references and websites

1. Course Name:
Project
2. Course code:
METP208
3. Semester/Year:
Chapter Two / 2025_2026
4. Date the description was prepared:
15/9/2025
5. Available forms of attendance:
In person, online
6. Number of credit hours (total) / Number of units (total)
30 hours of theory / 2 units
7. Name of the course coordinator
Name: Nour Abdel Latif Ezzat e-mail: noor.ae@ntu.edu.iq
8. Course Objectives:
_ TDeveloping scientific research and engineering analysis skills. _ Linking the theoretical aspect with the practical application in the specialization. _ Developing problem-solving and decision-making skills. _ Enhancing teamwork and scientific communication skills. _ Preparing the student to write technical reports and present projects. _ Developing the ability to use engineering software and tools.Modern.
9. Teaching and learning strategy:
_ Project-based learning. _ Scientific discussion and dialogue. _ Collaborative learning and teamwork. _ Practical application and field training. _ Using presentations and technical tools. _ Continuous follow-up and feedback

10. Course Structure					
Evaluation Method	Teaching method	Unit/Topic Name	Required learning outcomes	Hours	Week
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Project introduction and implementation mechanism	Knowledge and Application	2	the first
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Choosing the project topic and setting goals	Knowledge and Application	2	the second
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Gathering information and scientific sources	Knowledge and Application	2	the third

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Preparing the initial project plan	Knowledge and Application	2	Fourth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Studying the theoretical and analytical aspects	Knowledge and Application	2	Fifth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Preparing designs and plans	Knowledge and Application	2	Sixth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Starting the practical side of the project	Knowledge and Application	2	Seventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Follow-up on practical implementation	Knowledge and Application	2	Eighth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Analysis of preliminary results	Knowledge and Application	2	Ninth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Completion of implementation phases	Knowledge and Application	2	tenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Addressing technical issues	Knowledge and Application	2	eleventh
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Preparing the technical report	Knowledge and Application	2	twelfth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Project review and final modifications	Knowledge and Application	2	thirteenth

Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Preparing the presentation	Knowledge and Application	2	fourteenth
Reports, theoretical, oral, and written exams	Whiteboard, PowerPoint slides, practical experiments	Project discussion and final evaluation	Knowledge and Application	2	fifteenth

11. Course Evaluation

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

12. Learning and teaching resources

Methodology of engineering scientific research. Writing technical and engineering reports. Engineering project management. Fundamentals of mechanical design.	Required textbooks (curriculum books, if available)
Methodology of engineering scientific research. Writing technical and engineering reports. Engineering project management. Fundamentals of Mechanical Design.	Main references (sources)
	Recommended books and references (scientific journals and reports...)
	Electronic references and websites