

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

Second stage

Course Description Form

Course Description: Machine Parts Technology (1)

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

1. Course Name:
Machine Part - 1
2. Course Code:
METP210
3. Semester / Year:
2025-2026
4. Description Preparation Date:
22-6-2026
5. Available Attendance Forms:
Available Attendance Forms: Attendance (2 hours theoretical - an average of 0 hours per week)
6. Number of Credit Hours (Total) / Number of Units (Total)

30 hours /2

7. Course administrator's name (mention all, if more than one name)

Name: Zainab Mohammed Tahir

Email: mti.lec119.zainab@ntu.edu.iq

9. Course Objectives

1. Explain the role of mechanical parts in the machine system,
2. The relationship that binds these parts together,
3. How to make some calculations to design these parts and identify all the factors affecting them.

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

A- Cognitive objectives

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

B - Skills objectives of the course.

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

Teaching and learning methods

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

to observe, maintain and repair the machines in the machinery workshop at the Institute.

Evaluation methods

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

C. Emotional and value goals

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

Teaching and learning methods

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

Evaluation methods

The evaluation is carried out on the basis of:

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

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

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

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

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

Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fifteenth
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12. Infrastructure	
1. Required textbooks	Machinery Parts Book
2. Main references (sources)	3. Strength of Material by Ferdinal L . Singer 4. Strength of Materials by R.S.Khurmi. 5. Machine Design by R.S. Khurmi, J.K. Gupta 6. Machine Design by Paul H.Black . Schaums Outline Series of Machine Design by Hall , Holowenko , Laughin
A-Recommended books and references (scientific journals, reports ,....)	All sober scientific journals that have to do with the broad concept of design
B- Electronic references, websites	Machinery Parts Website

Course Description Form

Course Description: Machine Parts Technology (2)

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

1. Course Name:

Machine Part - 2
2. Course Code:
METP211
3. Semester / Year:
2025-2026
4. Description Preparation Date:
18-6-2026
5. Available Attendance Forms:
Available Attendance Forms: Attendance (2 hours theoretical - an average of 2 hours per week)
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours /2
7. Course administrator's name (mention all, if more than one name)
Name: Zainab Mohammed Tahir Email: mti.lec119.zainab@ntu.edu.iq

9. Course Objectives

1. Explain the role of mechanical parts in the machine system,
2. The relationship that binds these parts together,
3. How to make some calculations to design these parts and identify all the factors affecting them.

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

A- Cognitive objectives

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

B - Skills objectives of the course.

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

Teaching and learning methods

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

Evaluation methods

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

C. Emotional and value goals

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

Teaching and learning methods

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

Evaluation methods

The evaluation is carried out on the basis of:

- 1- First semester exam (theoretical).

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

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

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

12. Course Structure					
Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Design of Shafts.	Student comprehension of the subject	2 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Second
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Design of Journal Bearings.	Student comprehension of the subject	2 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Fourth

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

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

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

Course Description: Industrial Drawing 1

The student studies the foundations of industrial drawing 1 (Machine Drawing1) and is sometimes called mechanical drawing or machine drawing, but it is an artistic, engineering and industrial language. Like any language, it is used to understand and transfer industrial and engineering ideas between people,

whether it is through writing (preparing drawings) or by reading (studying previously prepared drawings).

1. Course Name:
Machine Drawing 1
2. Course Code:
METP220
3. Semester / Year:
2025-2026
4. Description Preparation Date:
22-6-2026
5. Available Attendance Forms:
Attendance (hours of work - an average of hours per week)
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours /3
7. Course administrator's name (mention all, if more than one name)
Name: Hasan Mahmood kaedhi Email: hasankaedhi@ntu.edu.iq

9. Course Objectives

Upon completion of this training module, the trainee has:

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

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

A- Cognitive objectives

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

B - Skills objectives of the course.

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

Teaching and learning methods

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

Evaluation methods

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

C. Emotional and value goals

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

Teaching and learning methods

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

Evaluation methods

The evaluation is carried out on the basis of:

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

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

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

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

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

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

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

Course Description Form

Course Description: Industrial Drawing 2

The student studies the foundations of industrial drawing 2 (Machine Drawing2) and is sometimes called mechanical drawing or machine drawing, but it is an artistic, engineering and industrial language. Like any language, it is used to understand and transfer industrial and engineering ideas between people,

whether it is by writing (preparing drawings) or by reading (studying drawings that have already been prepared).

1. Course Name:
Machine Drawing 2
2. Course Code:
METP220
3. Semester / Year:
2025-2026
4. Description Preparation Date:
18-6-2026
5. Available Attendance Forms:
Attendance (hours of work - an average of hours per week)
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours /3
7. Course administrator's name (mention all, if more than one name)
Name: Hasan Mahmood kaedhi Email: hasankaedhi@ntu.edu.iq

9. Course Objectives

Upon completion of this training module, the trainee has:

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

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

A- Cognitive objectives

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

B - Skills objectives of the course.

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

Teaching and learning methods

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

Evaluation methods

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

C. Emotional and value goals

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

Teaching and learning methods

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

Evaluation methods

The evaluation is carried out on the basis of:

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

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

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

16. Course structure (theoretical + practical)					
Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Welding linkage, welding symbols, drawing an assembly board with welding symbols	Student comprehension of the subject	3 hours	First
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	3 hours	Second
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Column connections (couplings) types, drawing an applied painting	Student comprehension of the subject	3 hours	Third

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Clutches, types and uses, with an assembly board	Student comprehension of the subject	3 hours	Fourth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Pulleys and belts, types and uses, with drawing two plates to assemble parts containing belt wheels of various types	Student comprehension of the subject	3 hours	Fifth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Loading chairs, assembly plate drawing for frictional loading chair	Student comprehension of the subject	3 hours	Sixth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Drawing of an applied plate for splitting and assembling the exhaust valve	Student comprehension of the subject	3 hours	Seventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Gears types, neutrophil gears basic definitions, drawing gear justice with assembly plate for engaging gear justice	Student comprehension of the subject	3 hours	Eighth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	3 hours	Ninth

Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Cone gears, drawing an assembly plate for engaging the bevel gear	Student comprehension of the subject	3 hours	Tenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	3 hours	Eleventh
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Introduction to Autodesk Adventure	Student comprehension of the subject	3 hours	Twelfth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Two-dimensional drawing environment, assembly environment	Student comprehension of the subject	3 hours	Thirteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Dynamic analysis and motion environment	Student comprehension of the subject	3 hours	Fourteenth
Explanation of the topic, discussion, solving problems	Theoretical lecture and the use of the screen and the means of explanation	Additions to fees	Student comprehension of the subject	3 hours	Fifteenth

12. Infrastructure

1. Required textbooks

1- "Fundamental of engineering drawing", Feench and Vierck.2-

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

Course Description Form

Course Description: Manufacturing Processes 1

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

21.	Course Name:
	Mechanical Techniques
22.	Course Code:
	MET122
23.	Semester / Year:
	1 st . and 2 nd . Semester/ 2025–2026
24.	Description Preparation Date:
	18–06–2026
25.	Available Attendance Forms:
	1- The weekly lesson schedule (theoretical and practical) is mandatory.

2- Discussions, academic sessions, other extracurricular activities, and academic conferences.	
26.Number of Credit Hours (Total) / Number of Units (Total)	
60 hours/ 60 units	
27. Course administrator's name (mention all, if more than one name)	
Name: Mohameed Taki Elyas Email: Mohamed.15arafat@ntu.edu.iq	
28. Course Objectives	
Course Objectives	• • •

9. Teaching and Learning Strategies
Learning and Teaching Strategy 1. Providing students with the basics and topics related to the learning outcomes prior to the skills needed to solve practical problems through lectures or presentations. 2. Solving a set of practical and applied examples by the course instructor. 3. Asking students to research some of the course vocabulary and how to utilize it in engineering fields. 4. Asking students to work in a group to prepare reports and research in areas related to the course. 5. Using modern means to present scientific and theoretical aspects, such as projectors, to attract attention and engage students, thus better conveying ideas. 6. Questioning students through discussion groups by posing thought-provoking questions (how, why, when, where, and which) on specific topics. 7. Using modern teaching methods, such as animation films and videos of practical experiments.
10. Expected Program Learning Outcomes
Knowledge: A1 - The ability to analyze operations into operating elements. A2 - Develop a technological path between production units. A3 - Prepare operating cards and orders for each unit and machine, and calculate operating time elements and loading programs for the units. A4 - Determine quality control elements. A5 - Conduct preliminary calculations of operating costs.
Skills:

B2 - The student must be able to identify the type of operation for which measuring devices and other operations are used.

B3 - The student must be able to identify the necessary part variables for operation.

B4 - The student must be able to calculate operating time for punching, milling, and various pattern preparation operations.

B5 - The student must be able to design an operating card for each operation and each part being operated.

Values:

A1- The student must be able to use all measuring tools.

A2- The student must be able to read all readings and units of measurement.

A3- The student must be able to identify all types of sand used in the plumbing process.

A4- The student must be able to identify all types of plumbing molds.

A5- The student must be able to perform plumbing operations.

11. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understanding the topic	Definition of measurement and units of measurement, error and its causes, methods of measuring basic dimensions, simple measuring devices.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
2	4	Understanding the topic	Verniers, their parts, uses, and how the micrometer works.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
3	4	Understanding the topic	Measuring templates and their uses, their types, and how to use them.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework

4	4	Understanding the topic	Measuring angles and profiles, angle measuring tools, measuring rods (hyphens), their types	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
5	4	Understanding the topic	Measuring angles and profiles, angle measuring tools, measuring rods (calipers), their types.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
6	4	Understanding the topic	Measuring screw elements, external and internal diameters, step measurement, and step diameter, electronic mechanical comparators.	Using the screen, board And Explanati7med ia	Discussion, quiz, problem solving, homework
7	4	Understanding the topic	The optical device, some modern measuring methods (acoustic frequency measuring devices, digital optical).	Us8ing the screen, board And Explanation media	Discussion, quiz, problem solving, homework
8	4	Understanding the topic	Filing and its role in industrial development, the stenography process, the tools used and the processes involved in the filing process, the files used and their specifications, machines, their types, and methods for attaching workpieces to them, uses of files, and how to clean files.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
9	4		Saw cutting, conditions required for sawing, saw blades, screeding and their types, chisels, how to sharpen and maintain them, types of hand hammer heads and how to secure them.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework

10	4		Drilling and milling, types of drills, types of primers, types of reamer, how to perform drilling and milling.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
11	4		Models, their types, woods used in their manufacture, conditions required for the model.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
12	4		Tools and equipment used in model making, molds for basins, and how to design a simple model.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
13	4		Founding, a historical overview, main methods of casting (casting, sand casting, metal mold casting, other casting methods), advantages of the casting process.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
14	4		Sand casting, casting sand, its specifications, components, casting sand, the equipment used, and additives to casting sand.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework
15	4		Sand casting, casting sand, its specifications, components, casting sand, the equipment used, and additives to casting sand.	Using the screen, board And Explanation media	Discussion, quiz, problem solving, homework

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

Course Description Form

Course Description: English Language2

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

1. Course Name:
English Language
2. Course Code:
NTU 102
3. Semester / Year:
2025-2026
4. Description Preparation Date:
22-6-2026
5. Available Attendance Forms:
Available Attendance Forms: Attendance (2 hours theoretical - an average of 2 hours per week)
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 2
7. Course administrator's name (mention all, if more than one name)
Name: Ashraf Abdalrazaq saed Email: ashraf_tech@ntu.edu.iq

9. Course Objectives

1. The student should be able to recognize the English language in an advanced way and enable him to communicate in a simple way.
2. Learn about modern methods of learning English.
3. Develop the student's speaking skills through conversations between students during the lecture.

4. Develop the student's ability to understand terms and how to use them.

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

A- Cognitive objectives

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

B - Skills objectives of the course.

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

Teaching and learning methods

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

Evaluation methods

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

C. Emotional and value goals

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

Teaching and learning methods

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

Evaluation methods

The evaluation is carried out on the basis of:

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

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

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

11. Course Structure (Theoretical)

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

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

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

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

Course Description Form

Course Description: Industrial Management

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

1. Course Name:
Industrial Management
2. Course Code:
MET128
3. Semester / Year:
2025-2026
4. Description Preparation Date:
18-6-2026
5. Available Attendance Forms:
Attendance (2 hours theoretical - an average of 2 hours per week)
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours /2
7. Course administrator's name (mention all, if more than one name)

Name: Ghada Yousef Ismail

Email: ghadayousif1964@ntu.edu.iq

9. Course Objectives

1. Clarifying the role of industrial management principles
2. The relationship between factories and the engineer and technician,
3. How to make some calculations for the design of production lines and identify all the factors affecting them.

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

A- Cognitive objectives

1. Recognize the concepts of industrial management principles
2. Expand students' perceptions and enhance the concept of design by giving them principles and design calculations.
3. Give the student experience in fees for industrial management.

B - Skills objectives of the course.

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

Teaching and learning methods

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

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

13. Course Structure					
Evaluation method	Method of education	Unit / Subject Name	Required Learning Outcomes	Hours	The week
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Stages and development of management, basic principles of management, characteristics of management, levels of management.	Student comprehension of the subject	2 hours	First
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Administrative functions, industrial management, its functions, industrial engineering, characteristics, industrial management.	Student comprehension of the subject	2 hours	Second
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	- Location and arrangement of the industrial unit - The main factors affecting the selection of industrial project sites - arrangement of the industrial unit (preliminary arrangement of the plant). - Classification of types of industrial unit arrangements. - Advantages, determinants and cases in which it applies (commodity arrangement, functional, mixed, common).	Student comprehension of the subject	2 hours	Third
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Production planning, production planning concept, production planning and control objectives.	Student comprehension of the subject	2 hours	Fourth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the	- Feasibility study for industrial projects:	Student comprehension of the subject	2 hours	V

	means of explanation	- An idea of the feasibility study for industrial projects. - Industrial Project - Stages of feasibility studies The importance of feasibility studies			
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Types of production, production planning methods, linear programming methods, graphic method and transport method.	Student comprehension of the subject	2 hours	Sixth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Seventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Study of work, methods of study of work, study of method, study of time, measurement of work.	Student comprehension of the subject	2 hours	Eighth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Maintenance, importance of maintenance, concept of technological system	Student comprehension of the subject	2 hours	Ninth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Types of maintenance, types of appearances	Student comprehension of the subject	2 hours	X
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Costs, cost classification, wages.	Student comprehension of the subject	2 hours	Eleventh
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation		Student comprehension of the subject	2 hours	Twelfth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the	Methods of calculating wages, incentives, types of incentives.	Student comprehension of the subject	2 hours	Thirteenth

	means of explanation				
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Procurement management: procurement, procurement steps, types of stored materials and methods of controlling them.	Student comprehension of the subject	2 hours	Fourteenth
Discussion, Quick Exam, Problem Solving, Homework	Theoretical lecture and the use of the screen and the means of explanation	Industrial safety, types of accidents, roads from accidents, preventive equipment and its types.	Student comprehension of the subject	2 hours	Fifteenth

12. Infrastructure	
Engineering Mechanics Book	
1. Required textbooks	1- Industrial Projects Management (Industrial Management) Authors Al, Shakarji, commendable· 1967 2- Ali Riad Management Information Systems Organization and Technology Riad Sultan Ali. Amman Dar, Zahran 2006 p. 2983/11/2006: Ra Descriptors: / Business Administration // Management Information

2. Main references (sources)	All sober scientific journals related to the broad concept of industrial management
A-Recommended books and references (scientific journals, reports ,....) B- Electronic references, websites	Industrial Management Websites