Academic program

Southern technical university

Basra Technical Institute

Department of Mechanical Technologies/Production

Scientific Supervision and Evaluation Authority

Quality Assurance and Academic Accreditation Department

Academic system: Semester

Final Certificate Name: Technical Diploma Mechanical/Production

Date of description preparation:

Date of fill description:

Signature:
Head of Department

Dr. Mohammad H. Radhi

Date : 5/6/2025

Signature
Assistant Dean for Academic Affairs

Dr. Abdel-Nasser Abdel-Jabbar

Date: 5/6/2025

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Quality Assurance and University Performance Division

Name of Director of Quality Assurance and University Performance Division: Anwar abdel Khaleq Abboud

Date: 5 - 6 - 2025

Signature:

Signature:
Dean of the Technical Institute

Assist. Prof. Dr. Diyah Kammel Shary

Introduction

To ensure the development of the department, the department's management and its members must carry out all the regular operations that contribute to making decisions related to the future of the department and its development. In addition to the procedures and operations required to achieve this desired future, the department must establish a reliable procedure to measure the level of program success.

This is done through the department's objectives, determining the policies and strategies necessary to achieve the objectives, and determining the necessary methods to ensure the implementation of the policies and strategy set.

This program description represents the long-term planning process that is officially prepared to achieve the department's objectives. One of the most important things that the strategic plan must contain is an executive summary and a description of the department, in addition to the benefit of this plan. This is followed by a strategic analysis of the strengths, weaknesses, available opportunities, and challenges that may face it.

Vision

The Mechanical Technology Department is one of the main technology departments that is working to expand its technical education base and modern applications in the society. Becoming a leader in providing certified technical services, the mechanical department is doing its best to foster a spirit of competition and cooperation with the community.

Message

The Department of Mechanical Technology adopts a general mission based in its general form on the framework of technical education in Iraq. The general objectives focus on graduating professional technical cadres with a level of education and training capable of managing technology systems and supporting the process of technical development to keep pace with rapid global technological developments.

The mission includes the following:

1. Following up on the development of training curriculums and subsequently modernizing laboratories and workshops.

2. Interacting with the labor market and community needs for qualification and training.

3. Adopting computer and internet technologies in education and training.

4. Activating the relationship with the private sector in the field of training.

The Mechanical Department Targets

The Mechanical Department, Production Branch, aims to prepare technical personnel who will serve as a link between specialists and skilled workers. The department prepares and equips graduates with theoretical, practical and applied information to enable them carrying out the tasks assigned to them.

A brief summary of the mechanical department (production branch)

The department was opened in 1973 and has been considered one of the first major departments established upon the institute's founding. Under the name "Department of Mechanics", the department comprised several branches (metal manufacturing, refrigeration and air conditioning, and automotive).

In 1987, the two branches (air conditioning/ refrigeration and automotive) were separated from the Department of Mechanics. The Department of Mechanics accepts graduates of middle school, in addition to the vocational education branch, with the aim of graduating advanced intermediate technical cadres capable of meeting the needs of official and semi-official institutions and departments in the Iraqi governorates.

The name of the Department of Mechanics/Metal manufacturing was changed to Mechanics/Production in 1999 and then to the Department of Mechanical Technologies in 2001.

A parallel study program was introduced in the department in the 2015-2016 academic year.

An evening study program was introduced in the 2017-2018 academic year.

The department includes classrooms, studios, and numerous laboratories within the department's specialization. The goal is to train students during the academic year and apply practical experiences by linking theory with practice, thus qualifying students to enter the job market after graduation. The top 10% of graduates from the department are accepted into the College of Engineering/Mechanics Department and the College of Engineering Technology/Thermal Engineering Department. In the past academic year 2023-2024, the college admission rate was increased to 20%.

Academic Program Description:

This academic program description provides a concise summary of the program's key features and the learning outcomes the student is expected to achieve, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each course within the program.

1. Educational Institution	Southern Technical University
2. Scientific Department / Center Basra Technical Institute	Department of Mechanical/Production Technologies
3. Name of Academic or Professional Program Mechanical	Production Technologies
4. Name of Final Certificate	Diploma in Mechanical/Production Technology
5. Study system	Semester
6. Accredited Accreditation Program	
7. Other External Influences	Training Courses / Field Visits / Summer Training
8. Date of Preparation of Description	2025

9. Objectives of the Academic Program:

A. Preparing and qualifying technicians specializing in mechanics/production who are able to meet the requirements of the labor market.

B. Creating appropriate conditions for developing theoretical and practical knowledge and skills.

C. Providing distinctive programs and experiences in the field of specialization in a manner that conforms to international quality standards.

Building and developing partnerships with governmental and private sectors and reviewing the needs of the labor market in terms of their need for technical expertise.
D. Preparing and qualifying technicians capable of performing everything related to workshop and factory work in terms of operating equipment. Machines, production of mechanical tools and equipment, and repair of mechanical devices and equipment in a

precise scientific manner.

10. Required program outputs and teaching, learning and evaluation methods

A- Cognitive objectives

A1- Study different types of mechanical devices and machines that are used in the field of production.

A2- Study different types of tools and equipment that are used within the specialization or in the field of measurement.

A3- Identify the methods of designing models that are applied practically in workshops and factories.

A4- Identify the correct methods by which metals are operated and formed in workshops and factories.

A5- Identify the distribution of production operations on operating elements and preparing the technological path from production units to achieve the best method of performance.

B- Program skill objectives

B1- Work on various operating machines (lathe, milling machine, scraper, other cutting machines).

B2- Work on computer and Internet technologies in developing self-skills in education and training.

B3- Gain experience in dealing with different types of machines and tools for measurement.

B4 - Gain experience in knowing how to analyze the performance of mechanical machines in production processes.

Teaching and learning methods

- Conducting practical experiments in laboratories and workshops and giving theoretical lectures.
- Scientific trips and field visits to work sites.
- Summer training and practical practice on devices in governmental and private institutions.

Evaluation methods -

Midterm/final exams.

- Short daily exams.
- Homework.
- Reports.
- Interaction within the lecture.

11. Required program outputs and teaching, learning and evaluation method 10. Required program outputs and teaching, learning and evaluation methods A- Cognitive objectives

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Teaching and learning methods

- Conducting practical experiments in laboratories and workshops and giving theoretical lectures.
- Scientific trips and field visits to work sites.
- Summer training and practical practice on devices in governmental and private institutions.

Evaluation methods - Midterm and final exams.

- Short daily exams.
- Homework.
- Reports.

Interaction within the lecture.

C- Ethical and Moral goals

C1- Guiding the student on the correct educational dealings with professors.

C2- Instilling the spirit of citizenship and cooperation among students.

C3- Establishing the principles of honesty and loyalty during work.

C4- Developing the principle of teamwork among students. Teaching and learning methods - Continuous educational seminars and courses. - Guidance and follow-up lectures. - Electronic seminars and workshops. Evaluation methods - Continuous assessment of student behavior during attendance. - Direct discussion with students during lectures. - Behavior changing in some students and following-up.
D- General and transferable qualification skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with technical means. D2- Developing the student's ability to deal with the labor market. D3- Developing the student's ability to deal with the Internet. D4- Developing the student's ability to dialogue and discusses
Teaching and learning methods - Explanation and clarification through lectures. - Method of presenting scientific materials using different display devices. - Self-learning through homework and mini-projects. - Laboratories. - Graduation projects. - Scientific visits. Evaluation methods - Testing the student's personality through discussion. - Interaction within the lecture. Mini-projects within the lecture.

Teaching and learning methods
- Explanation and clarification through lectures. - The method of displaying scientific materials with different projectors. - Self-learning through homework and mini-projects. - Laboratories. - Graduation projects. - Scientific visits.
Evaluation methods
- Test the student's personality through discussion. - Interaction within the lecture. - Mini-projects within the lecture.

1. Program Architecture				Certificates and credit hours
Level/Year	Course or Course Code	Course Name	Credit Hours	
First Year / First Semester		Accurate measurements	2N + 2p	Diploma degree Requires (95) units
		Properties of engineering materials	2N	
		Mechanical workshops 1	6p yearly	
		Mechanical Engineering (Statics)	2n +3 p	
		Engineering Drawing 1	3p	
		Math	2N	
		Electricity Technology 1	1N + 2p	
		Human Rights and Democracy	1n	
		English Language 1	2N	
First Year / Second Semester		Manufacturing Processes	2N + 2p	
		Materials Engineering	2N	
		Mechanical workshops	6p yearly	
		Mechanical Engineering (Kinetics)	2n +3 p	
		Math	2N	

		Computer Fundamentals 2	2 p	
		Engineering Drawing 2	3 N	
		Electricity Technology 2	1N + 2p	
		Crimes of the defunct Baath Party	1 n	
		Arabic Language	2N	

	1. Program Architecture			2. Certificates and credit hours
Level/Year	Course or Course Code	Course Name	Credit Hours	
Second Year / First Semester		Machine Parts Technology 1	3 N	Diploma degree Requires (95) units
		Operating operations	2N+2P	
		Mechanical workshops 2	6p yearly	
		Minerals 1	2n +2 p	
		Industrial Drawing 1	3p	
		Graduation Project	2p	
		Industrial Management	2N	
		English Language 2	2N	
Second Year / Second		Machine Parts Technology 2	3 N	

Semester		Forming processes	2N+2P	
		Mechanical workshops 2	6 p yearly	
		Metal 2	2N + 2G	
		Industrial Drawing 2	2N + 4 G	
		Graduation Project	3 p	
		Management and Quality Control	2 N	
		Computer Fundamentals 2	2 p	

1. Planning for personal development
- Training Courses - Scientific research - Scientific seminars and Discussion circles - Cultural, artistic and sports activities
2. Admission criterion (setting regulations related to admission to the college or institute)
Central admission for technological specialization. Selection of the scientific department according to the rate, desire and experience in the field of specialization.
3. The most important sources of information about the program
- University and Institute Website. - University Directory.

Curriculum Skills Outline

Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.

Year/Level	Course Code	Course Name	fundamental Or optional	Learning outcomes required from the program															
				Knowledge and understanding				Subject-specific skills				Thinking skills				General and transferred skills (or) other skills related to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
First Stage / First Semester		Accurate measurements	Essential	*	*	*	*			*	*	*	*	*	*	*	*	*	
		Properties of engineering materials	Essential	*	*							*	*	*	*	*	*	*	
		Coefficient 1	Essential									*	*	*	*	*	*	*	
		Engineering Mechanics (Stillness)	Essential									*	*	*	*	*	*	*	
		Engineering Drawing 1	Essential									*	*	*	*	*	*	*	
		Math	Essential									*	*	*	*	*	*	*	
		Electricity Technology 1	Essential				*	*	*		*	*	*	*	*	*	*	*	
		Human Rights and Democracy	Essential									*	*	*	*	*	*	*	
		English Language 1	Essential									*	*	*	*	*	*	*	
First Stage / Second Semester		Manufacturing Processes	Essential	*	*	*	*			*	*	*	*	*	*	*	*	*	*
		Engineering Materials	Essential	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		modulus	Essential		*							*	*	*	*	*	*	*	*
		Engineering Mechanics (Kinesiology)	Essential	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		Math	Essential	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		Computer Fundamentals 2	Essential	*	*		*					*	*	*	*	*	*	*	*
		Engineering Drawing 2	Essential									*	*	*	*	*	*	*	*
		Electricity Technology 2	Essential									*	*	*	*	*	*	*	*
		Crimes of the defunct Baath Party	Essential									*	*	*	*	*	*	*	*

Curriculum Skills Outline

Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.

Year/Level	Course Code	Course Name	fundamental Or optional	Learning outcomes required from the program			
				Knowledge and understanding	Subject-specific skills	Thinking skills	General and transferred skills (or) other skills related to employability and

																	personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4	
First stage		Machine Parts Technology 1	**Essential**	*	*	*	*			*	*	*	*	*	*	*	*	*		
		Operating operations	**Essential**	*	*							*	*	*	*	*	*	*		
		Coefficient 2	**Essential**									*	*	*	*	*	*	*		
		Minerals 1	**Essential**									*	*	*	*	*	*	*		
		Industrial Drawing 1	**Essential**									*	*	*	*	*	*	*		
		Graduation Project	**Essential**									*	*	*	*	*	*	*		
		Industrial Management	**Essential**				*	*	*		*	*	*	*	*	*	*	*		
		English Language 2	**Essential**									*	*	*	*	*	*	*		
Second stage		Machine Parts Technology 2	**Essential**	*	*	*	*			*	*	*	*	*	*	*	*	*	*	
		Forming processes	**Essential**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
		Coefficient 2	**Essential**		*							*	*	*	*	*	*	*	*	
		Metal 2	**Essential**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
		Industrial Drawing 2	**Essential**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
		Graduation Project	**Essential**	*	*		*					*	*	*	*	*	*	*	*	
		Management and Quality Control	**Essential**									*	*	*	*	*	*	*	*	
		Computer Fundamentals 2	**Essential**									*	*	*	*	*	*	*	*	

First Year Program Description
Details of First & Second Semesters Courses

Course Description 1

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University / Basra Technical Institute
2. Scientific Department / Center	Mechanical Techniques
3. Course Name/Code	Materials Properties, Materials Engineering
Available Attendance Forms	In-person learning
5. Semester/Year	First
6. Number of credit hours (total)	30 hours per class
7. Date of preparation of this description	9/5/2025

8. Course Objectives

Enable the student to identify materials and their properties, which are used in many applications.
Enable the student to understand the mechanical, chemical, magnetic and electrical properties of materials and the extent of their impact on applications.
Providing the student with experience in dealing with materials and knowing their different properties in applications.
Give an idea to the student about the different tests and how to deal with materials engineering through tests.

9. Course Outcomes and Teaching Methods, Learning and Assessment

A- Cognitive objectives

A1- Clarifying the basic concepts of materials, their properties and applications in various engineering fields.
A2- Acquire the necessary skills in dealing with engineering materials.
A3- Acquire the necessary skills in how to understand the properties of materials.

B. Program Skills Objectives

B1 – Teaching the student how to deal with the materials properties correctly.
B2 – Training the students on how to conduct various engineering tests for materials.
B3 – Teaching students how to deal with materials in proportion to their properties.

Teaching and learning methods

Lectures: Using the direct in-person lecture method for students to clarify the methodological material correctly Giving exercises and homework. Assigning students to prepare reports on materials and their characteristics.
Evaluation methods
Daily exams. Homework. Semester and final exams. Interaction within the lecture. Daily Attendance.
C- Ethical and Moral goals. C1- Focus: Raising students' attention to materials and their characteristics. C2- Response: Following up the student's interaction with the subject under study. C3- Interest: Following-up the students' interests and interaction with the different applications of the materials properties. C4- Identifying students' attitudes and directing the students to deal with the materials properties completely.
d. General and rehabilitative skills transferred (other skills related to employability and personal development). D1- Developing the student's ability to deal with the methods of materials properties. D2- Developing the student's ability to search for the engineering properties of materials on the Internet. D3- Developing the student's ability to deal with applications and tests of materials properties. D4- Developing the student's ability of communication and discussion.

10.Course structure					
The week	Hours	Required Learning Outcomes	Topic Name	Method of education	Evaluation method
1	2	The student should be able to know and understand the definition of materials engineering.	Materials Engineering definition	In-person learning	Homework and Exams
2	2	The student should be able to understand and know the atom, element, and types of bonds in materials	Atom, element, types of bonds in materials	In-person learning	Homework and Exams
3	2	The student should understand crystalline and amorphous materials	crystalline and amorphous materials	In-person learning	Homework and Exams
4	2	The student should be able to understand and know the different crystal shapes and their structures.	Different crystal shapes	In-person learning	Homework and Exams
5	2	The student should be able to understand and know the different mechanical properties of materials.	Mechanical properties of materials (stress, strain, stress-strain curve, ductility, collapse)	In-person learning	Homework and Exams
6	2	The student should be able to understand and know hardness and hardness tests.	Hardness and hardness tests	In-person learning	Homework and Exams
7	2	The student should be able to understand and know durability and durability tests.	Durability and durability tests	In-person learning	Homework and Exams
8	2	The student should be able to understand and know about shock and shock tests.	shock and shock tests	In-person learning	Homework and Exams

9	2	The student should be able to understand and know the fracture section of the specimen, the brittle fracture, and the ductile fracture.	the fracture section of the specimen, the brittle fracture, and the ductile fracture	In-person learning	Homework and Exams
10	2	The student should be able to understand and know fatigue	Fatigue.	In-person learning	Homework and Exams
11	2	The student should be able to understand the thermal properties of materials (thermal expansion, thermal conductivity)	Thermal properties of materials (thermal expansion, thermal conductivity)	In-person learning	Homework and Exams
12	2	The student should be able to understand and know the electrical properties of materials (ionic materials, insulating materials, metallic materials, factors affecting metallicity)	The electrical properties of materials (ionic materials, insulating materials, metallic materials, factors affecting metallicity)	In-person learning	Homework and Exams
13	2	The student should be able to understand and know the magnetic properties of materials (ferromagnetic materials, paramagnetic materials, diamagnetic materials).	The magnetic properties of materials (ferromagnetic materials, paramagnetic materials, diamagnetic materials)	In-person learning	Homework and Exams

14	2	The student should be able to understand and know magnetic hysteresis and the factors affecting magnetism, the chemical properties of materials (corrosion, electrochemical series, oxidation)	Magnetic hysteresis and the factors affecting magnetism, the chemical properties of materials (corrosion, electrochemical series, oxidation)	In-person learning	Homework and Exams
15	**2**	**First semester exam**		**In-person exam**	
16	2	The student should be able to understand and know carbon steel, the most important types of carbon steel, its properties and uses, iron, its most important ores and extraction, the blast furnace, and transformers	Carbon steel, the most important types of carbon steel, its properties and uses, iron, its most important ores and extraction, the blast furnace, and transformers	In-person learning	Homework and Exams
17	2	The student should be able to understand and know carbon steel, its most important types, properties, and uses.	Carbon steel, its most important types, properties, and uses	In-person learning	Homework and Exams
18	2	The student should be able to understand and know alloy steel, its most important types, properties, and uses	alloy steel, its most important types, properties, and uses	In-person learning	Homework and Exams
19	2	The student should be able to understand and know cast iron and its types	Cast iron and its types	In-person learning	Homework and Exams
20	2	The student should be able to understand and know cast iron, its properties and uses.	Cast iron, its properties and uses.	In-person learning	Homework and Exams

21	2	The student should be able to understand and know copper, its alloys, properties, and uses.	Copper, its alloys, properties, and uses	In-person learning	Homework and Exams
22	2	The student should be able to understand and know aluminum, its alloys, properties, and uses	Aluminum, its alloys, properties, and uses	In-person learning	Homework and Exams
23	2	The student should be able to understand and know nickel, its alloys, properties, and uses.	Nickel, its alloys, properties, and uses.	In-person learning	Homework and Exams
24	2	The student should be able to understand and know tin, its alloys, properties, and uses. Zinc, its alloys, properties, and uses, manganese, its alloys, properties, and uses.	Tin, its alloys, properties, and uses. Zinc, its alloys, properties, and uses, manganese, its alloys, properties, and uses.	In-person learning	Homework and Exams
25	2	The student should be able to understand and know other non-ferrous alloys (white metals, bearing alloys)	Other non-ferrous alloys (white metals, bearing alloys)	In-person learning	Homework and Exams
26	2	The student should be able to understand and know ceramic materials.	Ceramic materials	In-person learning	Homework and Exams
27	2	The student should be able to understand and know glass and concrete.	Glass, its types, manufacture, uses, and concrete and its industrial uses	In-person learning	Homework and Exams

28	2	The student should be able to understand and know polymers and the properties and uses of plastics.	Polymers, polymer molecules, types of polymers, properties and uses of plastics	In-person learning	Homework and Exams
29	**2**	**Second semester exam**		**Second semester exam**	

11. Infrastructure	
1. Required textbooks	Principles of Metallurgical and Materials Engineering, Engineering Metallurgy (Applied Physical Metallurgy).
2. Main references (sources)	Engineering materials and their tests, properties of engineering materials. Basic Engineering Metallurgy Theories Principles and application Aarkeyser Keyser
A. Recommended books and references (scientific journals, reports, 0000)	Metallurgical Physics
B. Electronic References, Websites	Choosing Engineering Materials - Google Books

12. Course Development Plan
Continuous access to the latest theories and concepts of engineering materials. Writing scientific research, publishing it or delivering it at conferences held at the university. Attending workshops, lectures and conferences related to the scientific material.

Course Description 2

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University
2. Scientific Department / Center	Mechanical Technologies/Production Branch
3. Course Name/Code	Mechanical Engineering (1) Static -Mechanical Engineering (2) Kinetic
4. Available Attendance Forms	In-person learning
5. Semester/Year	First+Second2024/2025
6. Number of credit hours (total)	60 hours theoretical 90 hours practical
7. Date of preparation of this description	10/5/2025

8. Course Objectives

1- The student can identify Mechanical Engineering in terms of forces, momentum, friction and the effect of forces on bodies and their movement.
2- The student can identify laboratory devices that measure some concepts such as the moment of inertia, the balance of force and result.
3- The student can calculate the angles and direction of forces and motion.

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

A- Cognitive objectives
A1- Clarifying the basic objectives related to Mechanical Engineering.
A2- Acquire skills in solving problems related to the lesson.
A3- Acquire skills in using the electronic calculator.

B. Program Skills Objectives
B1 – The student acquires the skill of applying what he has learned from the theoretical side to the practical side.
B2 – The student acquires the skill of solving problems related to the topics of the lesson.

Teaching and learning methods

1- Use the traditional blackboard.
2- Use presentations to facilitate explanation and use of time.
3- Using discussion to solve problems.
4- Allow students to participate in solving problems.

Evaluation methods

1- Discussion in class.
2- Conducting a daily exam in each semester.
3- Giving homework.
4- Mid-term exams.

C- Ethical and Moral goals. C1- Making the student related to the subject. C2- Following-up students by distributing attention within the class to everyone. C3- Linking the topics of the subject to daily life. A4- Giving concrete examples.
Teaching and learning methods
1- Brainstorming. 2- Traditional explanation. 3- Using modern methods as a projector.
Evaluation methods
1- Daily evaluation. 2- Evaluation of homework. 3- Evaluation of daily and semi-quarterly exams. 4- Interaction inside the hall during the lesson.
d. General and rehabilitative skills transferred (other skills related to employability and personal development). D1- Developing the student's skill to deal with the vocabulary of engineering mechanics. D2- Developing the student's skill to use the Internet in solving problems. D3- Developing the student's skill using the Internet and resources to learn more.

10. Course Structure/First Semester					
The week	Hours	Required Learning Outcomes	Topic Name	Method of education	Evaluation method
First	5	Teaching students the concepts of forces, measurement, and vectors	General concepts, forces, vectors and units of measurement	In-person learning	In-class discussion
Second	5	Teaching students how to analysis forces	Force Analysis	In-person learning	Homework
Third	5	Teaching the student to extract the resultant of forces by drawing and calculating	The forces resultant	In-person learning	Homework
Fourth	5	Teaching the student and learning about torque	Torque	In-person learning	In-class discussion
V	5	Torque calculation	Torque	In-person learning	Student participation in the solution
Sixth	5	Learning about double torque	Double torque	In-person learning	Daily exam
Seventh	5	Teaching the student about the equilibrium of forces and the free body	Equilibrium of forces and free body diagram	In-person learning	Solve an assignment in class
Eighth	5	Teaching the student about the equilibrium of forces	Conditions for equilibrium of forces	In-person learning	In-class discussion
Ninth	5	Teaching the student about the conditions	Conditions for equilibrium of forces	In-person learning	Homework
X	5	Teaching the student about the types of friction	Friction and its types.	In-person learning	Homework
Eleventh	5	Training the student to recognize the centers of geometric shapes	Geometric Shapes Centers	In-person learning	Homework
Twelfth	5	Teaching the student about the center of compound shapes	Compound Shapes Center	In-person learning	Solve examples on the board
Thirteenth	5	Teaching the student about the problem solving	Compound Shapes Center	In-person learning	Solve examples on the board

Fourteenth	5	Training the student to recognize and learn the moment of inertia	Moment of inertia of shapes	In-person learning	Question & Answer
Fifteenth	5	Training the student to recognize and learn the moment of inertia of compound shapes	Moment of inertia of compound shapes	In-person learning	Homework

Course Structure/Second Semester					
First	5	Teaching the student Newton's Second Law	Newton's Second Law	In-person learning	Question & Answer
Second	5	Teaching types of motion and linear motion with constant speed	Types of linear motions with constant speed	In-person learning	Homework
Third	5	Teaching the student to solve linear motion problems with constant acceleration	Linear motion with constant acceleration	In-person learning	Homework
Fourth	5	Teaching the student to solve motion problems on a curved line	Movement on a curved line	In-person learning	Solve examples
Fifth	5	Training the student to find solutions for angular motion and relative motion	Angular motion and relative motion	In-person learning	Assignment in class
Sixth	5	Teaching the student about work, power and energy	Work, power & Energy	In-person learning	Question & Answer
Seventh	5	Teaching the student to recognize the material resistance and its basic concept	Material resistance and basic concept	In-person learning	Question & Answer
Eighth	5	Teaching the student about the types of loads, stress, strain, elasticity, plasticity and deformation	Loads, stress, flexibility, plasticity and deformation	In-person learning	Question & Answer
Ninth	5	Teaching the student about Hooke's Law and the stress-strain curve	Hooke's Law and the stress-strain curve	In-person learning	The student draws the outline on the board

Tenth	5	Teach the student the expected normal stress from axial loads for a uniform section and a variable section.	The normal stress expected from an axial load. 1- Regular section. 2- Variable section	In-person learning	Assignment in class
Eleventh	5	Teaching the student shear stress concept.	Shear stress	In-person learning	Question & Answer
Twelfth	5	teaching the student about torsional effort	Torsional stress	In-person learning	Daily exam
Thirteenth	5	Teaching the student about the thermal stress	Thermal stress	In-person learning	Homework
Fourteenth	5	Introducing the student to the types of loads and bridges	Bridges, types of loads, types of bridges	In-person learning	Homework
Fifteenth	5	Introducing the student to the shear force and bending moment of a simply supported bridge	Shear force, bending moment, simple support bridge under axial load	In-person learning	In-class discussion

11. Infrastructure	
1. Required textbooks	Engineering Mechanics static & dynamics Bed four &flower 4th ed. 2005
2. Main references (sources)	1- Higdon &Stiles Engineering Mechanics 2- Engineering Mechanics by singer
A. Recommended books and references (scientific journals, reports)	Singh, Sadhu Strength of Martial 4thed.2007
B. Electronic References, Websites	Choosing Engineering Materials - Google Books

12. Course Development Plan
1- Following up on new research related to curriculum vocabulary 2- Conducting workshops and seminars related to the curriculum's vocabulary 3- Linking student projects to curriculum vocabulary

Course Description 3

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University
2. Scientific Department / Center	Basrah Technical Institute - Scientific Section: Mechanical Techniques
3. Course Name/Code	Engineering Drawing 1 + Engineering Drawing 2
Available Attendance Forms	In-person learning
5. Semester/Year	First + Second semester
6. Number of credit hours (total)	45 hours per semester
7. Date of preparation of this description	9\5\2025
8. Course Objectives	
Enable the student to identify the method of two-dimensional and three-dimensional engineering drawing through the use of AutoCAD 2007 in the computer and the method of building the drawing from points with Cartesian coordinates, whether the drawing is 2D or 3D. This procedure enables the students to imagine the shapes and looking at them from several sides (front, side and vertical perspective). It is done with practical application and continuous tests and makes the lecture tend to be a practical nature.	
9. Course Outcomes and Methods of Teaching, Learning and Assessment	

A- Cognitive objectives 1- Clarify the environment of the AutoCAD program and the necessary tools for engineering drawing. 2- Learn about drawing aids and how to use them. 3- How to determine and deal with drawing projections.
B. Program Skills Objectives 1 - Achieving skills in engineering drawing. 2 - Employing what the student has learned in the labor market. 3 - Extracting the final results of the drawing professionally.
Teaching and learning methods
Lectures: Using PowerPoint presentations to facilitate explanation and drawing step by step on the display screen And write the dimensions and points by extracting them during the lecture on the board.
Evaluation methods
-Daily exams. -Homework. - Semester and final exams for the subject. - Interaction within the lecture. - Daily Attendance. Academic pursuit 50%.
C- Ethical and Moral goals. - Focus: Raising students' attention on how to use the drawing tool. Response: Following up the student's interaction with the material during the drawing. Attention: Following up on students' interests and interacting with engineering drawing methods if it is 2D or 3D. Determine the attitudes of students and direct the student to deal with the engineering drawing material completely.
Teaching and learning methods
Lectures: Using presentations to facilitate the explanation of the prescribed drawings .Homework: Drawing samples.
Evaluation methods

- Daily exams. -Homework. Semester and final exams for the subject. Interaction within the lecture. Daily Attendance. Final Exam 50%.
d. General and transferable skills (other skills related to employability and personal development). 1- Developing the student's ability to deal with engineering drawing methods using Autocad2007 2- Developing the student's ability to see the drawing from different directions.

10. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	The student should be able to recognize the importance of Computer Engineering Drawing	The importance of engineering drawing Programs (AutoCAD program) for drawing \ Artboard Sizes \ Drawing geometric shapes \	Face-to-face lectures	Interaction with the lecture
2	3	The student should be able to know about computer aids.	Drawing Adjustments / Aids Computer Drawing (AutoCAD program)	Face-to-face lectures	Daily exams
3	3	The student should be able to know the engineering operations and the methods of dimensional coordination	Types of lines for engineering drawing \ engineering processes \ Dimensional mode	Face-to-face lectures	Interaction with the lecture
4 and 5	6	The student should be able to To know the methods of perspective drawing	Perspective drawing	Face-to-face lectures	Homework
6, 7 and 8	9	The student should be able to to absorb the theory of projection and Draw simple projections	Projection theory \ Draw simple projections	Face-to-face lectures	- Homework

9	3	The student should be able to draw by hands the shapes on projections	Hand drawing shapes on projections	Face-to-face lectures	Daily exam
10 and 11	6	The student should be able to know and understand the methods of Hand drawings on projections	Hand drawing shapes on projections	Face-to-face lectures	Interaction with the lecture
12, 13 and 14	9	The student should be able to draw geometric shapes	The importance of engineering drawing \Using the computer to draw \Artboard Sizes \Drawing geometric shapes	Face-to face lectures	Daily Attendance
15	**3**	**Semester exam**	**Semester exam**	**Semester exam**	**Semester exam**
16 and 17	6	The student should be able to know and understand the methods of drawing main projections with dihedral angles	draw main projections with dihedral angles,	Face-to face lectures	Interaction with the lecture
18 and 19	6	The student should be able to know the methods of concluding the third projection of the projectors	Conclusion of the third projection of the projectors	Face-to face lectures	Interaction with the lecture
20 and 21	6	The student should be able to know the method of construing perspective shapes from two or three projections	Construing perspective shapes from two or three projections	Face-to face lectures	Homework discussion
22 and 23	6	The student should be able to know the shapes of cutting lines based on the lectures	Cuts / Cutting Lines Shapes	Face-to face lectures	Interaction with the lecture

24 and 25	6	The student should be able to know the method of drawing projections based on pieces from one projection	drawing projections based on pieces from one projection	Face-to face lectures	Interaction with the lecture
26 and 27	6	The student should be able to know of the method of drawing a partially cut projection	Partially cut projection drawing	Face-to-face lectures	Daily attendance
28 and 29	6	The student should be able to know the methods of Drawing zigzag sections	Drawing a semi-cut projection / drawing zigzag sections	Face-to-face lectures	Interaction within – Lecture Discussion
30	**3**	**Semester exam**	**Semester exam**	**Semester exam**	**Semester exam**

Engineering Drawing Module Details of First Semester

Vocabulary details	The week
The importance of engineering drawing \ Using computer programs (AutoCAD program) for drawing \ drawing board sizes \ drawing geometric shapes.	1
Drawings Adjustments/Computer Drawing Aids (AutoCAD Program).	2
Types of lines for engineering drawing \ engineering operations \ dimensional mode.	3
Perspective drawing	4 and 5
Projection theory \ drawing simple projections .	6, 7 and 8
Hand drawing shapes on projections	9
Hand drawing shapes on projections	10 and 11
The importance of engineering drawing \ using computers to draw \ drawing board sizes \ drawing geometric shapes.	12, 13, 14 and 15

Engineering Drawing Module Details of Second Semester

Vocabulary details	The week
Drawing main projections by dihedral angles.	1 + 2
Conclusion of the third projection of the projectors	3 + 4
Deduce perspective from two or three projections.	5 + 6
Cuts / Cutting Lines Shapes by Material.	7 + 8
Drawing of cut projections from one projection.	9 + 10
Partially cut projected drawing.	11 + 12
Drawing a semi-cut projection / drawing zigzag sections.	13 + 14+15

11. Infrastructure	
1. Required textbooks	Engineering Drawing by Professor P.A.J. Jain
2. Main references (sources)	Engineering drawing by Engineer Youssef Al-Radhi
A. Recommended books and references (scientific journals, reports)	Zero Academy AutoCAD books
B. Electronic References, Websites	All reputable scientific journals related to AutoCAD Program Websites dedicated to AutoCAD Program

12. Course Development Plan
- Continuous access to the latest theories and concepts of engineering drawing specialized in mechanics - Attending workshops, lectures and conferences related to scientific material

Course Description 4

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University \ Basra Technical Institute
2. Scientific Department / Center	Mechanical techniques
3. Course Name/Code	Mathematics\1+Mathematics\2
4. Available Attendance Forms	In-person learning
5. Semester/Year	First + Second
6. Number of credit hours (total)	30 hours per semester
7. Date of preparation of this description	5\5\2025

8. Course Objectives

- Enabling the student to learn about mathematics in general and its applications in various experiments.
- Enabling the student to know and understand mathematics and perform the steps correctly and properly in solving mathematical problems.
- Providing the student with the skills of dealing with different concepts of mathematics and the various uses of mathematical applications.
- Enabling the student to solve complex problems and various applications in various fields.

9. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives 1 Clarifying the basic mathematics concepts and applications in various fields. 2. Achieving skills in solving math problems. 3. Achieving skills to understand the mathematics' basics 4. Gaining experience in various applications of mathematics.
B. Program Skills Objectives 1. Teaching the student the methods of applying mathematical concepts correctly. 2. Training students to solve various mathematical problems with different data types. 3. Training students with the benefit of applying mathematics and its applications. 4. Teaching students how to read the results of mathematical problems and interpret them correctly.

Teaching and learning methods
Lectures use presentations to facilitate the explanation of the topics of the article. Give exercises and exercise solutions to students. Assigning students to prepare reports on various topics of mathematics. Give a topic assignment at the end of each lecture to solve mathematical problems.
Evaluation methods
-Daily exams. -Homework. - Semester and final exams for the subject. - Interaction within the lecture. - Daily attendance. Academic Pursuit 40%.

C- Ethical and Moral goals. - Concentration: Raising students' attention to solving mathematical problems. – - Responding: Following up on the student's interaction with the subject under solution. - Attention: Following up on students' interests and interact with different applications of mathematics. -. Identifying students' attitudes and direct the student to deal with mathematics fully
Teaching and learning methods
Lectures: using presentations to facilitate the explanation of the topics of the article. Giving exercises and solutions to students. Assigning students to prepare reports on various topics of mathematics. Giving a topic assignment at the end of each lecture to solve mathematical problems.
Evaluation methods
Daily exams. Homework. Semester and final exams for the subject. Interaction within the lecture. Daily attendance. Final exam 60%.
d. General and transferable skills (other skills related to employability and personal development. 1. Developing the student's ability to deal with modern mathematics methods. 2. Developing the student's ability to deal with mathematics on the Internet. 3. Developing the student's ability to deal with multiple applications of mathematics. 4. Develop the student's ability to communicate and discuss.

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title In-person lectures	Teaching Method	Assessment Method
1	2	determinants, determinants of the second and third order	The student should be able to understand for basic theorems and definitions related to determinants, determinants of the second and third order.	In-person learning	Homework
2	2	determinants, Characteristics of determinants	The student should be able to understand characteristics of determinants	In-person learning	Daily exams
3	2	Cramer's method for determinants	The student should be able to understand Cramer's method for determinants	In-person learning	Interaction within the lecture
4	2	basic theorems and definitions related to derivatives	The student should be able to understand basic theorems and definitions related to derivatives	In-person learning	Homework
5	2	derivatives of trigonometric functions	The student should be able to understand derivatives of trigonometric functions	In-person learning	Semester and final exams for
6	**2**	**Semester Exam**	**Semester Exam**		
7	2	derivatives of exponential functions	The student should be able to understand exponential functions	In-person learning	Interact with the lecture
8	2	derivatives of logarithmic functions	The student should be able to understand derivatives of logarithmic functions	In-person learning	Interact with the lecture
9	2	implicit functions	The student should be able to understand derivatives of implicit functions	In-person learning	Homework
10	2	chain base	The student should be able to understand chain base	In-person learning	Interact with the lecture
11	2	Engineering derivative applications	The student should be able to understand Engineering derivative applications	In-person learning	Homework quick exam,
12	2	Applications of the physical derivative	The student should be able to understand Applications of the physical derivative	In-person learning	Semester and final exams for the subject

13	2	Applications of the derivative of maximum and minimum limits	The student should be able to understand the applications of the derivative of maximum and minimum limits	In-person learning	Interact with the lecture
14	2	Drawing functions	The student should be able to understand drawing functions	In-person learning	discussion and quick exam
15	**2**	**Semester exam**	**Semester exam**		
16 17 18	2	definite and indefinite integration	The student should be able to understand definite and indefinite integration	In-person learning	discussion and solution of exercises, quick exam
19 20 21	2	Integration methods, decomposition method and partial fractions method	The student should be able to understand Integration methods, decomposition method and partial fractions method	In-person learning	discussion and solution of exercises, quick exam
22	2	**Semester exam**	**Semester exam**		
23 24	2	Applications on definite integration, the area between the function curves and the axes and the area between two curves	The student should be able to understand and apply definite integration, applications on definite integration, the area between the function curves and the axes and the area between curves	In-person learning	discussion and solution of exercises, quick exam
25 26	2	First-order, first-degree and discrete differential equations	The student should be able to understand First-order, first-degree and discrete differential equations	In-person learning	discussion and solution of exercises, quick exam
27 28	2	Statistics, statistical operations	The student should be able to analyze Statistics, statistical operations	In-person learning	discussion and solution of exercises, quick exam
29		probability	The student should be able to understand and analyze probability	In-person learning	discussion and solution of exercises, quick exam
30	2	**Semester exam**	**Semester exam**		

First Semester/Vocabulary details	The week
Matrices, Determinants	1
Determinants Characteristics	2
Solving Linear Equations, Linear Equations, Cramer's Method, Applications	3

Derivative, Derivative of Algebraic Functions	4
derivative of a trigonometric function.	5
Higher order derivative, derivative of an exponential function	6
Derivative of a logarithmic function	7
Implicit function	8
Chain base	9
Physical applications of the derivative (slope equation, normal, velocity and acceleration)	10
Engineering applications of the derivative	11
increase, decrease of the derivative	12
Maximum and minimum limits, inflection points	13
Engineering applications of maximum and minimum limits	14
Drawing functions	15
Drawing functions	16

Second Semester/Vocabulary details	The week
Integration - Laws of Integration - Indefinite Integration	1
Integration of exponential and logarithmic functions, integration of trigonometric functions	2
Integral of the determinant, applications (distance under the curve, distance between the curve)	3
Rotational volumes	4
Arc length of the curve	5
Integration methods, integration by segmentation	6
Integration by substitution	7
Integration by partial fractions	8
Solving first-order and first-degree, continuous homogeneous differential equations	9
Linear Differential Equations - Applications	10
Vectors, arithmetic operations on vectors	11
Scalar and vector multiplication	12
Statistical operations, frequency distributions, frequency histogram, frequency curve	13
Mean, Range, Standard Deviation, Variance	14
Probability	15

11. Infrastructure	
1. Required textbooks	Thomas Calculus
2. Main references (sources)	Mathematics for Technicians: by Professor Obaid Mahmoud Al-Zubaie and Professor Adnan Salem Al-Saffar
A. Recommended books and references (scientific journals, reports)	Differential and Integral Calculus: by Frank Ayres Jr. and Elliot Mendelsohn
B. Electronic References, Websites	All reputable scientific journals related to mathematics Websites dedicated to mathematics

12. Course Development Plan
- Continuous access to the latest theories and concepts of mathematics - -Writing scientific research and publishing it or presenting it at conferences held at the university. - Attending workshops, lectures and conferences related to scientific material

Course Description5

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University \ Basra Technical Institute
2. Scientific Department / Center	Mechanical techniques
3. Course Name/Code	Electrical Technology 1 + Electrical Technology 2
4. Available Attendance Forms	In-person learning
5. Semester/Year	First + Second
6. Number of credit hours (total)	30 hours
7. Date of preparation of this description	9/5/2025
8. Course Objectives	
- Enabling the student to identify basic principles related to electricity in general. - Learning about some basic terms related to electricity -Identifying the foundations of electrical fault analysis - Enabling the student to analyze the basic electrical circuits	
9. Course outcomes and methods of teaching, learning and assessment	

A- Cognitive objectives A1- Clarification of terms related to electrical quantities A2- Acquire the skill of analyzing basic electrical circuits A3- Acquire the skill of analyzing general electrical faults A4- The possibility of calculating some electrical quantities for certain cases
B. Program Skills Objectives B1 – Teaching the student how to distinguish between different electrical terms B2 - Acquiring the skill of analyzing general electrical faults B3 – Acquire the skill of analyzing electrical circuits
Teaching and learning methods
Lectures mainly - the use of presentations - the solution of some problems and scientific discussion Students make research reports on specific topics within the scientific subject
Evaluation methods
- Daily exams - Homework - Final exams - Interaction and participation in scientific discussions of lecture topics - Scientific activities
Ethical and Moral goals C1. Stimulating students' attention to solve scientific exercises. C2. Monitoring students' engagement with the scientific material. C3. Monitoring students' interests in various branches of scientific material. C4. Identifying and directing students' interests in dealing with scientific vocabulary.
Teaching and learning methods
Lectures: using presentations to facilitate the explanation of the topics of the article. Giving exercises and solutions to students. Assigning students to prepare reports on various topics of electricity techniques.
Evaluation methods
Daily exams. Homework. Semester and final exams for the subject. Interaction within the lecture. Daily attendance. Scientific activities

D. General and transferable skills (other skills related to personal development.)
D1- The student will be able to analyze some electrical faults.
D2- The ability to deal with general electrical terminology.
D3- The ability to design electrical circuits.
D4- The ability to repair some electrical devices.

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	1	Realizing the basics of electricity	Electricity basics	Lectures discussion – brain storm	Test s – home works- exams
2	1	Knowing symbols and system of units	Electric symbols and units simple electric circuit current electromotive force and voltage	Lectures discussion – brain storm	Tests – home works- exams
3	1	Be able to analyze circuits and use special laws.	Potential difference Ohms law-resistors connections (Series, parallel and complex)	Lectures discussion – brain storm	Tests – home works- exams
4	1	Learn about electrical circuit analysis	Examples on some electric circuits	Lectures discussion – brain storm	Tests – home works- exams
5	1	Learning about alternating current and compare it with direct current.	Alternating current	Lectures discussion – brain storm	Tests – home works- exams

6	1	To be able to understand how to obtain alternating current	Generating AC – Power stations types	Lectures discussion – brain storm	Tests – home works- exams
7	1	Recognize and master some AC terms	Sine wave, The waveform of the current with time and frequency Definition of the effective value of the alternating current and voltage	Lectures discussion – brain storm	Tests – home works- exams
8	1	Be able to understand essential terms and solve problems for alternating current.	Knowledge of the functions and power factor, applications and examples of the use of alternating current in practical life	Lectures discussion – brain storm	Tests – home works- exams
9	1	Understanding subject specified terms	Electromagnetism and magnetic field merits	Lectures discussion – brain storm	Tests – home works- exams
10	1	Learn about materials, their properties, and how to compare their magnetic features.	Magnetic Materials Definitions (Field Density, Field Strength, and Magnetomotive Force)	Lectures discussion – brain storm	Tests – home works- exams

11	1	Knowing the interaction between electricity and magnetism and the relationship between them	Magnetic effect of electric current-examples, magnetic force	Lectures discussion – brain storm	Tests – home works-exams
12	1	Learn about the features and characteristics of multiphase alternating current.	Three-phase current system	Lectures discussion – brain storm	Tests – home works-exams
13	1	Learn about the single-phase and three-phase systems and the features of each system.	Single-phase alternating current, three-phase alternating current, phase identification method,	Lectures discussion – brain storm	Tests – home works-exams
14	1	Learn how to connect external loads and the advantages of each method.	Connection of wires to external electric loads	Lectures discussion – brain storm	Tests – home works-exams
15	1	Identify the features of the connection types and its importance in practical reality	Star connection techniques	Lectures discussion – brain storm	Tests – home works-exams

11. Infrastructure	
1. Required textbooks	Theory and Technology of Electrical Circuits, John Baird, Third Edition
2. Main references (sources)	Theory and Technology of Electrical Circuits, John Baird, Third Edition
A. Recommended books and references (scientific journals, reports)	Choosing Engineering Materials - Google Books

12. Course Development Plan
- Adding some scientific vocabulary to the curriculum to keep pace with the development of the labor market. - Modifying some vocabulary to align it with scientific developments in this field.

Course Description 6

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University
2. Scientific Department /Center	Basrah Technical Institute - Scientific Section: Mechanical techniques
3. Course Name/Code	Human Rights and Democracy
4. Available Attendance Forms	Weekly/Theoretical Attendance
5. Semester/Year	Quarterly
6. Number of credit hours (total)	Weekly 2 hours theoretical
7. Date of preparation of this description	12/ 5 /2025
8. Course Objectives	
1- Identify the general concepts of human rights and democracy 2- The student learns about the continuous awareness of human rights and the fundamental freedoms associated with them	
9. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives 1- Defending human dignity 2- Contribute to changing human life 3- Stand against all violations of human dignity	

4- Awareness of the individual of rights and duties

5.Right to personal integrity

6- Ensuring freedom of opinion and expression in a manner that does not conflict with the constitutional text

B. Program Skills Objectives

1- Introducing the student to the existence of guarantees that guarantee rights
2- Introducing the student to the subordination of rulers and convicts before the law
3- Introducing the student that everyone enjoys rights and duties
4- Introducing the student to the supervisory role played by governmental and nongovernmental organizations
5- Introducing the student to the constitutionality of laws

Teaching and learning methods

1- Using references and periodicals and using modern means of learning such as the Internet
2–Classroom discussions
3- Contribute to the additions that contribute to the development of the course

Evaluation methods

1- Discussing student reports
2-Short surprise exams
3. Reports and homework
4- Extra-curricular activities

C- Ethical and Moral goals

1- Preparing students for how to think
2- Exercise the spirit of responsibility and challenge, and be able to address it.
3- Raising graduates on the principles of ethical and financial integrity.
4- Fights everything that aims to ignore, undermine or infringe on rights
Working on the establishment of civil society organizations

Teaching and learning methods

Lectures reports discussion

Evaluation methods

Oral test, Surprise exam, Written exam, Daily activity

d. General and rehabilitative skills transferred (other skills related to employability and personal development).

1. Awareness of rights and duties
2- The existence of constitutional and judicial guarantees
3- The supervisory role of the authorities responsible for control of all kinds

10.Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Definition of human rights and their goals	Human rights	Theoretical	Discussion
2	2	Human rights in civilizations	Ways to Express Focus	Theoretical	Daily tests
3	2	Human rights in heavenly laws with a focus on the Islamic religion	Human rights	Theoretical	Daily tests
4-5	2	Human Rights in Contemporary History, Regional Recognition of Human Rights, and NGOs	Human rights	Theoretical	Daily tests
6-7	2	Human rights in Iraqi constitutions and the relationship of rights to public freedoms	Human rights in Iraqi constitutions	Theoretical	Daily tests
8-10	2	Modern human rights and their guarantees	Modern human rights	Theoretical	Daily tests
11-12	2	Democracy, its definition, types and concepts	Democracy and its concept	Theoretical	Daily tests
13-15	2	The concept of freedoms and their classification	The concept of freedoms	Theoretical	Daily tests

11. Infrastructure	
2. Main references (sources)	Hamid Hanoun Khaled, Human Rights
A. Recommended books and references (scientific journals, reports)	Ahmed Fathi Sorour, Constitutional legitimacy and human rights Riyad Aziz Hadi, Human Rights H Hamid Hanoun Khaled, Human Rights

12. Course Development Plan
1- Update course vocabulary 2- Accreditation of main sources 3- Suitability and compatibility of the theoretical aspect of the course with what the student actually needs with the required specialization

Course Description 7

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University
2. Scientific Department / Center	Basrah Technical Institute - Scientific Section: Mechanical Techniques
3. Course Name/Code	Baath Party Crimes in Iraq
4. Available Attendance Forms	Weekly/Theoretical Attendance
5. Semester/Year	Quarterly
6. Number of credit hours (total)	Weekly 2 hours theoretical
7. Date of preparation of this description	12/ 5 /2025
8. Course Objectives	
1- Identify the general concepts of human rights and democracy 2- The student learns about the continuous awareness of human rights and the fundamental freedoms associated with them	

9. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives 1- Achieving justice for the families of the victims of the dissolved Baathist regime 2- Introducing new generations to the extent of the destruction inflicted by the Baath in Iraq 3- Studying the genocide suffered by Iraqis at the hands of the Baath Party
B. Program Skills Objectives 1- Introducing the student to the existence of guarantees that guarantee rights 2- Introducing the student to the subordination of rulers and convicts before the law 3- Introducing the student that everyone enjoys rights and duties 4- Introducing the student to the supervisory role played by governmental and nongovernmental organizations 5- Introducing the student to the constitutionality of laws
Teaching and learning methods
1- Using references and periodicals and using modern means of learning such as the Internet 2–Classroom discussions 3- Contribute to the additions that contribute to the development of the course
Evaluation methods
1- Discussing student reports 2-Short surprise exams 3. Reports and homework 4- Extra-curricular activities
C- Ethical and Moral goals. 1- Preparing students for how to think 2- Exercise the spirit of responsibility and challenge, and be able to address it. 3- Raising graduates on the principles of ethical and financial integrity. 4- Fights everything that aims to ignore, undermine or infringe on rights 5- Working on the establishment of civil society organizations
Teaching and learning methods

1-Lectures 2- Reports 3. Discussion
Evaluation methods
1- Oral test 2- Surprise exam 3- Written exam 4- Daily activity
d. General and rehabilitative skills transferred (other skills related to employability and personal development). 1. Awareness of rights and duties 2- The existence of constitutional and judicial guarantees

10. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Baath crimes according to the law of the Supreme Iraqi Criminal Tribunal	Crimes of the dissolved Baath	Prepared and updated lectures	Oral and written tests and daily activity
2	2	Definition of crime, its divisions and types of international crimes	The concept of crime	Prepared and updated lectures	Surprise test, reports and discussion
3-5	2	Mechanisms of psychological crimes and their effects	Psychosocial crimes	Prepared and updated lectures	Oral exam
6 – 7	2	Photos of violations of Iraqi laws	Violations of laws	Prepared and updated lectures	Oral exam
8 -10	2	Military and radioactive contamination	Environmental Crimes	Prepared and updated lectures	Oral exam
11 -13	2	Drainage of marshes and orchards	Environmental crimes	Prepared and updated lectures	Quizzes, reports and discussions
14-15	2	Mass grave events and chronological classification	Mass grave crimes	Prepared and updated lectures	Quizzes, reports and discussions

11. Infrastructure	
1. Required textbooks	A course for all public and private universities
2. Main references (sources)	
A. Recommended books and references (scientific journals, reports)	Knowledge Foundation for the Study of Baath Crimes in Iraq
	Written by Dr. Qais Nasser and Mr. Abdulhadi Matouk
B. Electronic References, Websites	

12. Course Development Plan
1- Update course vocabulary 2- Accreditation of main sources 3- Suitability and compatibility of the theoretical aspect of the course with what the student actually needs with the required specialization

1.Educational institution	Southern Technical University / Basrah Technical Institute
2. Scientific Department / Center	Mechanical Techniques
3. Course Name/Code	Calculator Apps 1 + Calculator Apps 2
4.Available Attendance Forms	In-person learning
5. Semester/Year	First Semester + Second Semester
6. Number of credit hours (total)	30 hours per semester
7.Date of preparation of this description	12/ 5 /2025

8. Course Objectives
1- Raising students' level of knowledge in computers and its applications. 2- Keeping pace with the development in the field of computer. 3- Preparing competent codifiers through the use of computers to increase the quality of artistic and technical work in the field.

Course Description 8

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

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

A- Cognitive objectives A1- Enriching computers with the latest information to keep pace with the rapid technical progress A2- Preparing students to work efficiently with computer technologies and applications A3- Providing the latest software necessary for the educational process and the practical side
B. Program Skills Objectives B1 – Preparing qualified and trained competencies by creating a stimulating environment for learning and creativity B2 – Increasing the efficiency of students' use of modern technologies, which qualifies them to compete in the labor market. B3 – Increase the efficiency of the work of the civil and technical through the use of the latest computer applications in all fields
Teaching and learning methods
Practical lectures: Using projectors to explain applications directly and in detail Carrying out practical exercises and testing students with them on a daily basis. Conducting practical exams on a weekly basis
Evaluation methods
Daily exams Weekly Exams Participation during lectures Daily attendance and commitment in the laboratory Pursuit 50%
C- Ethical and Moral goals. Focus: Developing and increasing students' efficiency in using computers and its applications Response: Following up the extent to which the student's skills develop with the subject and the level of its implementation Attention: Following up the interest of students with modern applications of computers Directing students to deal with the latest applications and keep pace with them.
Teaching and learning methods
Practical lectures: Using projectors to explain applications directly and in detail Carrying out practical exercises and testing students with them on a

daily basis. Conducting practical exams on a weekly basis
Evaluation methods
Daily exams Homework Weekly Exams Participation during lectures Daily attendance and commitment in the laboratory Pursuit 50%
D. General and rehabilitative skills transferred (other skills related to employability and personal development). 1 - Developing the student's ability to deal with modern computer applications 2- Keeping pace with the rapid development in the field of computers through the Internet 3– Developing students' skills to deal with many applications and in all fields 4- Developing communication skills and putting forward new and creative ideas

10.infrastructure	
1. Required textbooks	Ministry of Higher Education and Scientific Research book for the course (Computer Basics and Office Applications, Part One + Two + Three + Four)
2. Main References (Sources) A. Books and references recommended by scientific journals, reports	

11. First Semester Course structure

Week	Number of hours Required	learning outcomes	Name of unit course or subject	Teaching method	Evaluation method
1	2	Introducing students to Excel 2010 and using the program interface.	Learning about Excel 2010 and explain the program	Practical face-to-face lectures	Daily practical test
2	2	The student must be able to execute any command from the menus and their details.	interface Basic menus and explain the file menu	Practical face-to-face lectures	Lecture participation
3	2	The student must be able to execute any command from the main page and its details.	Home page explaining the clipboard and the font group and alignment and number	Practical face-to-face lectures	Homework
4	2	The student should be able to Implement the conditional formatting style set and format tables and cells	Conditional Formatting Styles Group and Formatting Tables and Cells	Practical in person lectures	Daily practical test
5	2	The student should be able to Implement the cell group commands to delete columns, rows and cells and insert and format them	Cells Group Delete, Insert and Format Columns, Rows and Cells	Practical in person lectures	Daily practical test
6	2	The student should be able to Implement the search, sort and replace edit group commands	Edit Group Search, Sort and Replace	Practical in person lectures	Daily practical test
7	2	The student should be able to Implement the page layout tab commands, the format and page setup group	Page Layout Tab Page Setup and Format Group	Practical in person lectures	Daily practical test
8	2	The student should be able to implement the sheet options group	Sheet Options Group	Practical in person lectures	Participation in the lecture

9	2	The student should be able to implement the insert tab and the tables group	Insert Tab and Tables Group	Practical in person lectures	Homework
10	2	The student should be able to implement the illustrations group commands	Illustrations Group	Practical in person lectures	Participation in the lecture
11	2	The student must be able to implement all types of diagram commands.	diagram commands.	Practical in person lectures	Participate in the lecture
12	2	The student should be able to implement the text commands, their modifications and symbols	Text and Symbols Group	Practical in person lectures	Homework
13	2	The student must be able to execute function commands and formulas How to create conditions and get results	Formulas and Function Types	Practical in person lectures	Participation in the lecture
14	2	The student must be able to execute the if function and its importance in all fields and deal with modifying data	Implementing simple and compound if functions	Practical in person lectures	Participate in the lecture
15	2	The student must understand the basics of dealing with networks and the Internet	Network and Internet Basics	Practical in person lectures	Homework

Second Semester Course structure

Week	Number of hours Required	learning outcomes	Name of unit course or subject	Teaching method	Evaluation method
1	2	The student must understand the basics of operating systems and their functions.	Introducing students to operating systems and their functions	Practical face-to-face lectures	Daily practical test
2	2	The student must be able to execute Windows 7 and Windows 10 operating system commands.	Windows 7 and Windows 10 operating systems, characteristics and features of each system	Practical face-to-face lectures	Lecture participation
3	2	The student must deal with the components of the desktop and the Start menu.	Desktop and Start menu components	Practical face-to-face lectures	Homework
4	2	The student must be able to execute task bar commands.	task bar	Practical in person lectures	Daily practical test
5	2	The student must be able to execute commands for files and folders, and arrange and configure folders and files.	folders and files format and setup	Practical in person lectures	Daily practical test
6	2	The student must deal with icons.	icons	Practical in person lectures	Daily practical test
7	2	The student must be able to execute control panel commands.	control panel	Practical in person lectures	Daily practical test
8	2	The student must be able to execute device and printer commands.	devices and printer	Practical in person lectures	Participation in the lecture
9	2	The student must be able to execute set time and date commands.	set time and date	Practical in person lectures	Homework

10	2	The student must be able to execute commands to uninstall and install programs and features.	Uninstall and install programs and features	Practical in person lectures	Daily practical test
11	2	The student must be able to execute commands to display and control available networks in the network and sharing center.	View and control available networks and sharing center	Practical in person lectures	Participation in the lecture
12	2	The student must be able to execute Word 2010 commands, the program interface, and the main menus	Word 2010 program interface and main menus	Practical in person lectures	Homework
13	2	The student must be able to execute commands to write and edit texts and control the main page groups.	Writing and editing texts and controlling home page groups	Practical in person lectures	Daily practical test
14	2	The student must be able to perform page layout, insert, save, and print commands.	Page layout, insertion, saving and printing documents	Practical in person lectures	Participate in the lecture
15	2	The student must be able to execute PowerPoint 2010 interface commands and create presentations and slides.	Power Point 2010 interface and creating presentations and slides	Practical in person lectures	Daily practical test and Participate in the lecture

12. Course Development Plan

1- Adopting the most up-to-date office applications included in the curriculum.
2- Incorporating Google applications, teaching students how to use them, and keeping up with them throughout the curriculum.
3- Connecting laboratory computers to the internet and expanding student access to the most up-to-date applications.

Course Description 9

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1.Educational institution	Southern Technical University / Basrah Technical Institute
2. Scientific Department / Center	Mechanical Techniques
3. Course Name/Code	Arabic Language
4.Available Attendance Forms	In-person learning
5. Semester/Year	First Semester
6. Number of credit hours (total)	30 hours per semester
7.Date of preparation of this description	12/ 5 /2025

8. Course Objectives

1- - Helping students learn to read and write correctly and achieve the intended learning outcomes.

2- - Understanding the importance of the Arabic language and its relationship to guidance and scientific research.

3- Understanding scientific foundations and specifications and how to apply them to scientific subjects.

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

A- Cognitive objectives

A1- Encouraging students to develop creative ideas on a specific topic.

A2- Acquiring language, communication, and correct pronunciation skills.

A3- Students develop the habit of developing their ideas with others by relying on correct language.

B. Program Skills Objectives B1 - Teaching students how to use their Arabic language correctly. B2 - Training students on how to communicate with others. B3 - Teaching students how to develop their personal language skills.
Teaching and learning methods
Lectures: - Using the live lecture method to properly explain the curriculum material to students. - Providing exercises and homework. - Using a data show to simplify the explanation of the material.
Evaluation methods
Daily exams. Homework. Midterm and final exams. Interaction in class. Daily attendance. Daily participation in solving exercises.
C- Ethical and Moral goals. A1- Concentration: Engaging students in grammar rules. A2- Response: Monitoring students' engagement with the material being studied. A3- Interest: Monitoring students' interests and engagement with Arabic grammar rules.
D. General and rehabilitative skills transferred (other skills related to employability and personal development). D1- Developing the student's ability to interact with Arabic language styles. D2- Developing the student's ability to engage in dialogue, exchange ideas, and understand Arabic grammar. D3- Developing the student's ability to engage in communication and discussion.

10. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1-	2	The student should be able to identify the most important linguistic errors as a concept and distinguish between the closed and open Taa.	The Concept of Linguistic Errors The Closed, Open, and Long Taa	In-person lectures	Homework and Exams
2-	2	The student should be able to understand and know the rules of the extended and shortened alif, and the solar and lunar letters.	Writing the extended and shortened alif, and the solar and lunar letters	In-person lectures	Homework and Exams
3	2	Pronunciation of the letters Dhad and Tha	the letters Dhad and Tha	In-person lectures	Homework and Exams
4	2	How to write hamza	writing hamza	In-person lectures	Homework and Exams
5	2	Punctuation rules	Punctuation	In-person lectures	Homework and Exams
6	2	The student should be able to understand and know the noun and the verb and differentiate between them.	The noun and the verb and differentiation between them	In-person lectures	Homework and Exams
7	2	The student should be able to know the verbs and their rules.	Verbs	In-person lectures	Homework and Exams

8	2	The student should be able to understand and know the rules of numbers.	Numbers	In-person lectures	Homework and Exams
9	2	The student should be able to understand and recognize common linguistic errors.	Language error applications	In-person lectures	Homework and Exams
10	2	The student should be able to understand and recognize common linguistic errors.	Language error applications	In-person lectures	Homework and Exams
11	2	The student should be able to understand the rules of Noon and Tanween and the meanings of prepositions.	Noon and Tanween and prepositions	In-person lectures	Homework and Exams
12	2	The student should be able to understand and know the formal aspects of administrative discourse.	Formal aspects of administrative discourse	In-person lectures	Homework and Exams
13	2	The student should be able to understand the language of administrative discourse.	Language of administrative discourse	In-person lectures	Homework and Exams
14	2	The student should be able to understand the language of administrative discourse.	Language of administrative discourse	In-person lectures	Homework and Exams
15	2	The student should be able to understand and know correspondence.	administrative correspondence	In-person lectures	Homework and Exams

11.infrastructure	
1. Required textbooks	A collection of lectures in the Arabic language
2. Main References (Sources)	Clear Dictation Arabic for non-specialists
B. Electronic References, Websites	Arabic Learning Websites

12. Course Development Plan
3- Update course vocabulary 4- Accreditation of main sources 3- Suitability and compatibility of the theoretical aspect of the course with what the student actually needs with the required specialization

Course Description 10

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1.Educational institution	Southern Technical University / Basrah Technical Institute
2. Scientific Department / Center	Mechanical Techniques
3. Course Name/Code	Accuracy measurements/Semester1
4.Available Attendance Forms	In-person learning
5. Semester/Year	First Semester
6. Number of credit hours (total)	60 hours (theoretical + practical) per semester
7.Date of preparation of this description	12/ 5 /2025

8. Course Objectives

1- - Knowledge of general precision measurement principles.
2- - Study the types of measuring devices and their uses.
3- - Knowledge of the equipment and devices used in metal measurement processes.
4- - Knowledge of the characteristics and features of the measurement process.
5- - Calculating the types and methods of measurement.

9. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives A1 Learning the principles of measuring metals. A2. Knowing the properties and types of materials to be measured. A3 Learning about the equipment and devices required for the measurement process. A4. Knowing the types of measuring devices.
B. Program Skills Objectives B1. Using various types of instruments and devices in measurement processes. B2. The methods and techniques used in measurement processes. B3. Test metals suitable for the measurement process.
Teaching and learning methods
- Conducting practical experiments in laboratories and workshops and delivering theoretical lectures. - Scientific trips and field visits to work sites. - Summer training and practical experience on equipment in governmental and private institutions.
Evaluation methods
- Midterm and final exams. - Daily quizzes. - Homework assignments. - Reports. - Classroom interaction.
C- Ethical and Moral goals. 1. Guiding students on proper educational interactions with professors. 2. Instilling a spirit of citizenship and cooperation among students. 3. Establishing the principles of honesty and dedication in work. 4. Developing the principle of teamwork among students.
Teaching and learning methods
- Continuing educational seminars. - Guidance and follow-up lectures. - Online seminars and workshops.
Evaluation methods
- Continuous assessment of student behavior during class. - Direct discussion with students during lectures.

- Changes in behavior among some students and follow-up.
D. General and rehabilitative skills transferred (other skills related to employability and personal development). 1. Developing students' ability to use technology. 2. Developing students' ability to navigate the job market. 3. Developing students' ability to use the internet. 4. Developing students' ability to engage in dialogue and discussion.

10.infrastructure	
1. Required textbooks	Introduction to Production Engineering by Hassan Hussein Fahmy Principles of Metal Casting by Dr. Salah El-Din Mohamed Metal Forming Methods by Dr. Anwar Abdel Wahid

11. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1-	2+2	Teaching the student the science and process of measurement	Definition of metrology, basic elements of metrology, procedures to be followed when carrying out a measurement, methods of carrying out a measurement	Theoretical and practical	Theoretical and practical exams
2-	2+2	Introducing the student to units of measurement and their terminology	Measurement and units of measurement, measurement terms, errors and their causes	Theoretical and practical	Theoretical and practical exams
3	2+2	Training the student on measurement and error	Measurement and units of measurement, errors and their causes	Theoretical and practical	Theoretical and practical exams

4	2+2	Introducing the student to measuring the main dimensions using a ruler.	Methods of measuring basic dimensions, simple measuring devices, measuring dimensions using a ruler and a meter	Theoretical and practical	Theoretical and practical exams
5	2+2	Teaching the student the basics of measurement	Verniers, parts, uses, types	Theoretical and practical	Theoretical and practical exams
6	2+2	Teaching students about micrometers and their parts	Micrometers, their types, uses, parts, and how a micrometer works	Theoretical and practical	Theoretical and practical exams
7	2+2	Introducing the student to measurement templates	Measuring templates, their uses, types, and how to use them	Theoretical and practical	Theoretical and practical exams
8	2+2	Teaching students to measure angles	Measuring angles and sides, angle measuring tools, using measuring watches (indicators)	Theoretical and practical	Theoretical and practical exams
9	2+2	Teaching the student to measure angles using the sine column	Measuring angles using a sine column	Theoretical and practical	Theoretical and practical exams
10	2+2	Using angle measurement using the measuring rods	Measuring angles using measuring rods (squares), their types	Theoretical and practical	Theoretical and practical exams
11	2+2	Learn about the screw elements, outer and inner diameters, and pitch.	How to measure screw elements, external and internal diameters, step measurement, step diameter measurement	Theoretical and practical	Theoretical and practical exams
12	2+2	Introducing the student to the determinants of measurement	Measurement parameters, types, uses	Theoretical and practical	Theoretical and practical exams

13	2+2	Teaching the student about measuring templates, calipers, and micrometers	Measuring templates, methods for calibrating calipers and micrometers	Theoretical and practical	Theoretical and practical exams
14	2+2	Learn about the optical device and modern measurement methods	Optical device, some modern measurement methods (acoustic frequency meters, digital optical)	Theoretical and practical	Theoretical and practical exams
15	2+2	Teaching students to measure surface roughness	surface roughness measurement	Theoretical and practical	Theoretical and practical exams

12. Course Development Plan
1- Following up on new research related to curriculum vocabulary 2- Conducting workshops and seminars related to the curriculum's vocabulary 3- Linking student projects to curriculum vocabulary

Course Description 11

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1.Educational institution	Southern Technical University / Basrah Technical Institute
2. Scientific Department / Center	Mechanical Techniques
3. Course Name/Code	Manufacturing Processes/Semester2
4.Available Attendance Forms	In-person learning
5. Semester/Year	Second Semester
6. Number of credit hours (total)	60 hours (theoretical + practical) per semester
7.Date of preparation of this description	12/ 5 /2025
8. Course Objectives 1- - Knowledge of the principles of general manufacturing processes 2- - Study the types, methods, and foundations of manufacturing processes 3- - Knowledge of the advantages and disadvantages of various types of manufacturing 4- - Knowledge of the types and properties of machinable materials 5- Calculating forces and work expended during metal manufacturing	

9. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives A1. Knowing the principles of metal manufacturing processes A2. Learning about the properties of the materials to be manufactured A3. Calculating the forces and work expended in the manufacturing process A4. Knowing the advantages and disadvantages of manufacturing processes
B. Program Skills Objectives B1. Using various types of tools and equipment in manufacturing processes. B2. Methods and techniques used in manufacturing processes. B3. Testing metals suitable for the manufacturing process.
Teaching and learning methods
-Conducting practical experiments in laboratories and workshops and giving theoretical lectures. - Scientific trips and field visits to work sites. - Summer training and practical experience on equipment in government and private institutions.
Evaluation methods
- Midterm and final exams - Daily quizzes - Homework - Reports - Classroom interaction
C- Ethical and Moral goals. 1. Guiding students on proper educational interactions with professors. 2. Instilling a spirit of citizenship and cooperation among students. 3. Establishing the principles of honesty and dedication in work. 4. Developing the principle of teamwork among students.
Teaching and learning methods
- Continuing educational seminars. - Guidance and follow-up lectures. - Online seminars and workshops.
Evaluation methods
Continuous assessment of student behavior during class - Direct discussion with students during lectures - Changes in behavior among some students and follow-up

D. General and rehabilitative skills transferred (other skills related to employability and personal development).

1. Developing students' ability to use technology.
2. Developing students' ability to navigate the job market.
3. Developing students' ability to use the internet.
4. Developing students' ability to engage in communication and discussion.

10.infrastructure	
1. Required textbooks	Manufacturing Methods: Dr. Abdul Razzaq Ismail Khader Principles of Milling Operations: Muhammad Abdul Hamid

11. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1-	2+2	Teaching the student about piercing and its types	Piercing, Drilling and milling, types of drills, types of primers, types of rims, how to perform drilling and milling	Theoretical and practical	Theoretical and practical exams
2-	2+2	Teaching the student about models	Models, their types, the wood used in their manufacture, and the conditions that must be met in the model	Theoretical and practical	Theoretical and practical exams
3	2+2	Training the student on tools and devices	Tools and equipment used in model making, code templates, and how to design a simple model	Theoretical and practical	Theoretical and practical exams
4	2+2	Introducing the student to casting and its types	Casting, historical overview, main methods of casting (casting, sand casting, metal mold casting, other methods of casting), advantages of the casting process	Theoretical and practical	Theoretical and practical exams

5-6	2+2	Training students in sand casting	Sand casting, casting sand, casting sand specifications, casting sand components, equipment used and additives to casting sand	Theoretical and practical	Theoretical and practical exams
7-8	2+2	Teaching the student the pulp and its types	Pulp, its types, pulp sand, mixing ratios and additives, stages of its production (mixing and preparing sand, making the core, drying it), benefits of the drying process, ovens, methods of drying the core and its equipment	Theoretical and practical	Theoretical and practical exams
9-10	2+2	Introducing the student to Casting	Casting with metal molds, its types, centrifugal casting, and its types	Theoretical and practical	Theoretical and practical exams
11	2+2	Teaching students lost wax Casting	Lost wax casting, continuous casting, shell casting	Theoretical and practical	Theoretical and practical exams
12	2+2	Teaching students welding	Welding, basics of metal welding, main welding methods (pressure welding, electric arc fusion welding, other fusion welding methods, tungsten welding and brazing), types of welding joints	Theoretical and practical	Theoretical and practical exams
13	2+2	Training students in pressure welding	Hot pressure welding (electric resistance welding including spot welding, seam welding and flash welding), cold pressure welding, explosive pressure welding, ultrasonic pressure welding	Theoretical and practical	Theoretical and practical exams
14	2+2	Teaching the student about fuse welding	Fusion welding, gas welding, oxy-hydrogen welding, oxy-acetylene welding, types of flames, right-handed and left-handed welding, oxy-acetylene cutting	Theoretical and practical	Theoretical and practical exams

15	2+2	Training students in electric arc welding	Arc welding, welding current, direct and reverse polarity methods, types of electrodes, metal electrode coatings and their types	Theoretical and practical	Theoretical and practical exams

12. Course Development Plan
1- Following up on new research related to curriculum vocabulary 2- Conducting workshops and seminars related to the curriculum's vocabulary 3- Linking student projects to curriculum vocabulary

Courses for the second Year

First semester + Second semester

Course Description 1

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational Institution	Southern Technical University
2. Scientific Department / Center Basra Technical Institute	Department of Mechanical/Production Technologies
3. Name of Academic or Professional Program Mechanical	Machinery Parts Technology1+ Machinery Parts Technology2
4. Available Attendance Forms	Weekly attendance only
5. Semester/Year	First Semester + Second Semester
6. Number of credit hours	3 hours per week, total 90 hours
7. Date of Preparation of Description	9/5/2025
8. Machine parts course aims to clarify the role of mechanical parts in the machine system and the relationship that links these parts to each other and how to make some calculations to design these parts and neutralize all the factors affecting them.	
9. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives A1- Expanding the mental ability of the student to be able to find solutions to design mechanical parts A2- The ability to perform calculations for various mechanical parts and transfer them to the ground	

B. Program Skills Objectives
B1 - Adjusting the scientific aspects of machine parts B2 – Providing students with the skills of solving scientific problems and through constructive discussions for better results.

Teaching and learning methods
1- lectures 2- E-learning 3- Homework 4- Periodic reports
Evaluation methods
1- Continuing Education 2- Semester exams, mid-year exams and final exams
C- Ethical and Moral goals. C1- Identifying the components of mechanical parts in details. C2- Expanding thinking and analysis skills in topics related to solving scientific problems. C3- Preparing the student for a successful career in the engineering field.
Teaching and learning methods
Strategic teaching according to the student's ability, the strategy of critical thinking and brainstorming.
Evaluation methods
Exams, motivations, student feedback
d. General and rehabilitative skills transferred (other skills related to employability and personal development). D1- Listening skills D2. Discussion skills D3- Using the virtual library and the Internet

10.Course Structure					
The week	Hours	Required Learning Outcomes	Unit Name Subject	Method education	Evaluation method
1	N3	Resistance of revised materials	Machinery Parts Technology	theoretic	Classroom assignments and discussion
2 till 5	N3	Types of weld-and rivet fastened joints and their efficiency	Machinery Parts Technology	theoretic	Classroom assignments and homework
6 till 9	N3	Types and connections threaded and with switches	Machinery Parts Technology	theoretic	discussion
10 till 20	N3	Types of frictional clutches, types of springs and their design	Machinery Parts Technology	theoretic	discussion
21 till 24	N3	Types of belts and transmission shafts	Machinery Parts Technology	theoretic	discussion
Vocabulary of the second chapter					
25 till 29	N3	Transmission gears types and design	Machinery Parts Technology	theoretic	Exams and discussions
30	N3	Final exam			

11.Infrastructure	
1. Required textbooks	MACHINE DESIGN BY R.S.KHURMI AND J.K.GUPTA
2. Main references (sources)	MACHINE DESIGN BY R.S.KHURMI AND SHAH
A. Recommended books and references (scientific journals, reports)	Production Engineering and Machinery Parts Design Books
B. Electronic References, Websites	Up-to-date machine parts websites

12. Course Development Plan
Through the development of courses using modern scientific sources and more computer applications on mechanical parts and the preparation of cadres with a high degree of theoretical and practical understanding.

Course Description 2

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University / Basrah Technical Institute
2. Scientific Department / Center	Department of Mechanical Techniques / Production
3. Course Name/Code	Operation Process/Semester 1
4. Available Attendance Forms	daily
5. Semester/Year	Semester system
6. Number of credit hours (total)	60 hours (theoretical + practical) per semester
7. Date of preparation of this description	10/5/2025
8. Course Objectives	
- Knowledge of general operating principles - Study the types of operation process, the foundations of operation and engineering tolerances. - Knowledge of the equipment and devices used in the shining operations (turning, milling and others). - Knowledge of metal work, cutting operations, characteristics of metal operations and number of pieces. - Calculation of geometric tolerances, cutting forces and cutting time.	

9. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives A1- Knowledge of the operating principles of metals. A2- Knowing the properties of the materials to be operated. A3- Knowledge of geometric tolerances and forces required for the formation process. A4- Knowing the types of operating machines.
B - Skills objectives of the program. B1 – The use of tools and devices in different kinds of operations. B2 – The methods used in the operations processes. B3 – Testing metals suitable for the operation process.
Teaching and learning methods
- Conducting practical experiments in laboratories and workshops and giving theoretical lectures. - Scientific trips and field visits to work sites. - Summer training and practical practice on the devices in government and private institutions.

Evaluation methods
Semester and final exams. Daily short exams. Homework. Reports. - Interaction within the lecture.
C- Ethical and Moral goals. C1- Guiding the student on the correct educational dealing with lecturers. C2- Instilling the spirit of citizenship and cooperation among students. C3- Consolidating the principles of honesty and sincerity during work. C4- Developing the principle of teamwork among students.
Teaching and learning methods
Continuous educational seminar. Guidance and follow-up lectures. Webinars and workshops.
Evaluation methods
Continuous evaluation of the student's behavior their study. Direct discussion with students during lectures. Behavior changing in some students and following them up

d. General and rehabilitative skills transferred (other skills related to employability and personal development). D1- Developing the student's ability to deal with technical means. D2- The student's ability to deal with the labor market. D3- Developing the student's ability to deal with the Internet. D4- Developing the student's ability in communication and discussion.

10.infrastructure	
1. Required textbooks	Manufacturing Processes Book by Osama Mohammed Al-Mardi Al-Sulaimani Metalworking Technology by Rafi Walid Al-Baghdadi

11. Course Development Plan
1- Following up on new research related to curriculum vocabulary 2- Conducting workshops and seminars related to the curriculum's vocabulary 3- Linking student projects to curriculum vocabulary

12. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First Semester					
First	2+2	Teaching the student how to find geometric tolerances	Engineering tolerances, duplications, duplex systems, tolerance ranks, duplex units, basic deviations.	Theoretical + Practical	Theoretical and practical exams
Second	2+2	Teaching the student to recognize the basic systems of tolerance	Types of tolerances, hole platform, column platform, duality symbols, tolerances for free dimensions, detailed dualities, choice of dualities and their economic advantages.	Theoretical + Practical	Theoretical and practical exams

Third	2+2	Training and teaching students on cutting operations	Metalworking, cutting operations, introduction to chip ironing theory and influencing factors, methods of fixing workpieces, including round and non-round ones, cutting edges used, and longitudinal and transverse feed stocks.	Theoretical + Practical	Theoretical and practical exams
Fourth	2+2	Teaching the student about lathe pens and the effect of lathe pen angles	Lathe pens, identifying the types of lathe pen angles, the effect of lathe pen angles on the cutting process, types of lathe pens, cutting conditions, cutting elements, uses of cutting speeds, and the use of tables and speed charts, classifying cutting tools according to operating methods and the number of cutting edges	Theoretical + Practical	Theoretical and practical exams
V	2+2	Introducing the student to the emerging categorical limit	Cutting edge, emerging cutting edge and its formation theory, factors affecting it, factors leading to its size reduction, cooling and its importance for cutting operations, different cooling fluids	Theoretical + Practical	Theoretical and practical exams

Sixth	2+2	Teaching the student how to make the operation card and the sequence card	How to create a worksheet for a set of operations, calculate its elements, and calculate the cutting time for each operation. How to use the sequence card to create a product path through the various units. Factors affecting the selection of cutting speed (the effect of the cutting tool's properties, the effect of the operating elements, and the effect of the operating equipment's properties).	Theoretical + Practical	Theoretical and practical exams
Seventh	2+2	Teaching students how to use turret lathe machines and study the operations	Automatic turret lathes, study of the operations that can be operated and analysis of the operations on the product, types of tools used and their arrangement on the hexagonal, quadrilateral, front and rear heads	Theoretical + Practical	Theoretical and practical exams
Eighth	2+2	Preparing the student to learn milling and its most important operations	Milling, identifying the operations that can be performed on milling machines, parts and components of horizontal and vertical milling machines, and the nature of the work of each part.	Theoretical + Practical	Theoretical and practical exams
Ninth	2+2	Learn about machine accessories and dividing heads.	Machine accessories, dividing heads, workpiece fasteners, mandrels and bushings	Theoretical + Practical	Theoretical and practical exams

X	2+2	Learn about milling machine accessories	Milling machine accessories, methods of fixing workpieces (directly by clamps, and indirectly by types of clamps and angles) (methods of fixing knives, fixing with rotary clamps and fixed clamps)	Theoretical + Practical	Theoretical and practical exams
Eleventh	2+2	Learning about the division head device and its methods	Dividing head device, dividing methods (direct, indirect, differential, angle dividing), types of milling operations and products of each operation	Theoretical + Practical	Theoretical and practical exams
Twelfth	2+2	Learn about milling time calculations	Milling time calculations, milling time calculation in the case of a closed channel, a channel open from one side, from two sides, milling time calculation in the case of using a circumferential cutting knife	Theoretical + Practical	Theoretical and practical exams
Thirteenth	2+2	Teaching students on non-traditional machines	Conventional cutting machines: Electro-spark cutting, ultrasonic cutting, advantages and disadvantages of the process, limitations of use and products, cutting tool design, metal removal rate	Theoretical + Practical	Theoretical and practical exams
Fourteenth	2+2	Teaching students about electrochemical cutting of metals	Electrochemical cutting of metals, advantages, disadvantages, products, cutting tool design, metal removal rate	Theoretical + Practical	Theoretical and practical exams
Fifteenth	2+2	Teaching students how to cut with laser	Waterjet cutting, laser cutting, advantages, disadvantages and products, cutting head design, study of variables of each method and their effect on removal rate and accuracy.	Theoretical + Practical	Theoretical and practical exams

Course Description 3

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational Institution	Southern Technical University
2. Scientific Department / Center Basra Technical Institute	Department of Mechanical/Production Technologies
3. Name of Academic Program	Forming Process
4. Available Attendance Forms	daily
5. Semester/Year	Semester system
6. Number of credit hours	60 hours (theoretical + practical) per semester
7. Date of Preparation of Description	8/5/2025
8. Course Objectives	
A- Knowledge of the general principles of formation A1- Studying the types of formation process, methods and foundations A2- Knowing the advantages and disadvantages of formation of all kinds A3- Knowing the types and properties of formable materials A4- Calculation of the forces and work expended during the formation process	
9. Course Outcomes and Methods of Teaching, Learning and Assessment	
A- Cognitive objectives A1- Knowledge of the principles of metals forming A2- Knowing the properties of the materials to be formed A3- Knowledge of the forces and work done for the formation process A4- Knowing the advantages and disadvantages of forming processes	
B. Program Skills Objectives B1 – The use of tools and devices used of various kinds in the formation processes B2 – Methods used in forming processes B3 – Testing of metals suitable for the forming process	

Teaching and learning methods
Conducting practical experiments in laboratories and workshops and giving theoretical lectures Scientific trips and field visits to work sites Summer training and practical practice on devices in government and private institutions
Evaluation methods
Semester and final exams Daily short exams Homework Reports Interaction within the lecture
C- Ethical and Moral goals. A1- Guiding students on proper educational interactions with teachers. A2- Instilling a spirit of citizenship and cooperation among students. A3- Establishing the principles of honesty and dedication at work. A4- Developing the principle of teamwork among students.
Teaching and learning methods
- Continuing educational seminars. - Guidance and follow-up lectures. - Online seminars and workshops.
Evaluation methods
Continuous assessment of student behavior during class - Direct discussion with students during lectures - Monitoring behavioral changes in some students and monitoring their progress
D- General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to use technology. D2- Developing the student's ability to navigate the job market. D3- Developing the student's ability to use the internet. D4- Developing the student's ability to engage in communication and discussion.

10.infrastructure	
1. Required textbooks	Principles of Manufacturing Processes by Amer Yahya Al-Jarjis and Maher Hashem Hadi Principles of Metal Forming Processes by Engineer Harith Al-Jubouri

11.Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First Semester					
First	2+2	Introducing the student to the formation of minerals and their basics	Metal Forming, Forming Theory, Foundations of Cold and Hot Forming	Theoretical + Practical	Theoretical and practical exams
Second	2+2	Introducing the student to the features of the shaping process	Advantages and disadvantages of the forming process, properties of the material being formed	Theoretical + Practical	Theoretical and practical exams
Third	2+2	Introducing the student to the conditions of the formation process	Conditions of the formation process, strain curve, yield point, plastic flow	Theoretical + Practical	Theoretical and practical exams
Fourth	2+2	Introducing the student to forging and its methods	Blacksmithing and forging, Blacksmithing equipment, Stables blacksmithing elements	Theoretical + Practical	Theoretical and practical exams
Fifth and sixth	4+4	Teaching the student about the rolling process and its methods	Rolling process and its foundations, rolling methods and products, types of machines used	Theoretical + Practical	Theoretical and practical exams
Seventh and eighth	4+4	Teaching the student about the extrusion process and the products of the extrusion process	Extrusion Process, Extrusion Theory, Extrusion Process Products, Extrusion Types	Theoretical + Practical	Theoretical and practical exams
Ninth and tenth	4+4	Teaching the student the process of cutting and perforating	Shearing and marbling, basics of shearing process, calculation of shear capacity, types of molds	Theoretical + Practical	Theoretical and practical exams

Eleventh	2+2	Teaching students about deep drawing	Drawing, deep Drawing, basics of Drawing process, calculating Drawing force, types of Drawing	Theoretical + Practical	Theoretical and practical exams
Twelfth	2+2	Teaching and preparing students in non-traditional ways	Unconventional methods in metal forming, their advantages and types	Theoretical + Practical	Theoretical and practical exams
Thirteenth	2+2	Teaching the student about the formation processes and their types	Magnetic batch forming, types, advantages, disadvantages	Theoretical + Practical	Theoretical and practical exams
Fourteenth and fifteenth	2+2	Teaching students about electro-hydroforming processes	Hydroelectric shaping, advantages and characteristics of the process, shaping with an explosive charge, its types, advantages and disadvantages	Theoretical	Theoretical and

12. Course Development Plan
1- Following up on new research related to curriculum vocabulary 2- Conducting workshops and seminars related to the curriculum's vocabulary 3- Linking student projects to curriculum vocabulary

Course Description 4

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University
2. Scientific Department / Center	Mechanical Technologies / Production Branch
3. Course Name/Code	Industrial Management

4. Available Attendance Forms	Theoretical lectures / case study for economic solutions
5. Semester/Year	First semester
6. Number of credit hours (total)	Two hours a week
7. Date of preparation of this description	12 / 5 / 2025

8. Course Objectives
A complete description of the definition of industrial management and quality control. The course included industrial management, including factory locations, how to make production decisions, addressing costs and their types, and how to calculate wages. The course also included industrial engineering, curative and preventive maintenance of production machines, and occupational safety from risks and accidents due to defective products. The course also included occupational safety and how to calculate injuries at work. The course also included statistical calculations for grouped and ungrouped data, including the arithmetic mean, median, mode, and all specialized illustrative charts for work monitoring the product to achieve the lowest costs, highest quality, and success of the industrial project and competition in the labor market.

9. Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives A1- Identifying the industrial project A2. Decision Making A3- Training and maintenance A4-Statistics A5- Occupational Safety A6- Maintenance and training to reduce accidents
B. Program Skills Objectives B1 – The development of proper administrative scientific research B2 – Technological development B3 – Artificial Intelligence B4- Case study to solve economic problems
Teaching and learning methods

The total grade is divided as following: (30) grades for mid-semester exam (10) grades for student activity (60) grades for final exam
C- Ethical and Moral goals. C1- Making the right decisions in the industrial project. C2- Achieving profits and reducing losses. C3- Creative scientific cognitive development by achieving a competitive product for the market. C4- Training workers through maintenance of machines.
Teaching and learning methods
Modern methods are considered one of the most important methods of learning and teaching the use of the model for data, field application and case study to solve industrial problems
Evaluation methods
Conduct and teach the student to study the case and apply practical exercise to solve problems, find solutions and provide economic solutions to him.
d. General and rehabilitative skills transferred (other skills related to employability and personal development). D1 - Scientific research. D2- Practical application of problem solving. D3- Innovation and creativity and the student's orientation to achieve them. D4 - Completion of statistical skills.

10.Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
The first	Two hours	Teaching students to make decisions to solve economic problems	Management / Industrial Management	Theoretical lectures	Problem solving by statistical practical application

Second	Two hours	Introducing the student to the selection of a factory location	Decision making and its types	Theoretical lectures	Examples and assignments
Third	Two hours	How to calculate break-even costs	Costs	Theoretical lectures	Homework
Fourth	Two hours	How wages are calculated	Wages / Halsey-Raun Method	Theoretical lectures	Examples and assignments
V	Two hours	Identifying the purchase account	purchases	Theoretical lectures	Discussion and examples
Sixth	Two hours	Teaching students economic feasibility	Factors affecting production	Theoretical lectures	Discussion
Seventh	Two hours	Training students on maintenance schedules	Maintenance	Theoretical lectures	Discussion and examples
Eighth	Two hours	Teaching the student to choose therapeutic maintenance	Types of maintenance	Theoretical lectures	Classwork
Ninth	Two hours	Teaching students to choose preventive maintenance	Preventive and emergency maintenance	Theoretical lectures	Homework
X	Two hours	Introducing the student to the maintenance and production system	Maintenance & Training	Theoretical lectures	Classwork
Eleventh	Two hours	Student training on production lines and production planning	Types of production in terms of processes	Theoretical lectures	Classwork

Twelfth	Two hours	Teaching the student on the production line	Production line efficiency	Theoretical lectures	Discussion and homework
Thirteenth	Two hours	How students choose planning methods	Types of planning methods	Theoretical lectures	Discussion and classwork
Fourteenth	Two hours	Learn the steps of linear programming and transportation problems.	Linear programming solution to the transportation problem	Theoretical lectures	Homework
Fifteenth	Two hours	Training and educating students on occupational safety	Calculating the frequency and severity of the injury	Theoretical lectures	Discussion and examples

11.Infrastructure	
1. Required textbooks	Industrial Management Book / Ahmed Ragheb Ahmed
2. Main references (sources)	Industrial Management and Occupational Safety Book / Haider Majid Muftah Engineer Tarek Mohamed Bilal
A. Recommended books and references (scientific journals, reports)	Japanese quality kaizen books and references
B. Electronic References, Websites	Prof. Dr. Kamel Mohamed Al-Maghrabi Strategic Management of Industry 2024 / Online

12.Course Development Plan
Adding new topics related to sustainability, industrial strategy, and industrial technology. Artificial intelligence in industrial projects aims to reduce effort, achieve greater accuracy, and maximize profits. Achieving economic, environmental, and social sustainability is one of the most important goals of industry and industrial decision-makers, as the environment is considered one of the most important sources of production. Preserving it through sustainable industry and economic sustainability enables industrial projects to be implemented at the lowest cost and highest quality. Developing accident prevention methods and using modern equipment to prevent injuries.

Course Description 5

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational institution	Southern Technical University
2. Scientific Department / Center	Mechanical Technologies / Production Branch Scientific Section
3. Course Name/Code	Management and Quality Control
4. Available Attendance Forms	Theoretical lectures / case study for economic solutions
5. Semester/Year	Second semester
6. Number of credit hours (total)	Two hours a week
7. Date of preparation of this description	12 / 5 / 2025
8. Course Objectives	

A comprehensive description of industrial management and quality control. The course covers industrial management, including factory locations and how to make production decisions. It also includes quality control for statistical calculations of grouped and ungrouped data, including the arithmetic mean, median, and mode, as well as all specialized illustrative charts for product monitoring to achieve lower costs, higher quality, and the success of the industrial project and competitiveness in the labor market. Control charts and monitoring charts to control defect rates in industrial products.

9.Course Outcomes and Methods of Teaching, Learning and Assessment
A- Cognitive objectives A1- Identifying the industrial project A2. Decision Making A3- Identifying the methods of quality control A4-Statistics A5- Quality control A6- Identifying the defect in the product
B. Program Skills Objectives B1 – The development of proper administrative scientific research B2 – Technological development B3 – Artificial Intelligence B4- Case study to solve economic problems Mapping with computer programs
Teaching and learning methods
The total grade is divided as following: (30) grades for mid-semester exam (10) grades for student activity (60) grades for final exam
C- Ethical and Moral goals. C1- Making the right decisions in the industrial project. C2- Achieving profits and reducing losses. C3- Creative scientific cognitive development by achieving a competitive product for the market. C4- Quality control and production control.
Teaching and learning methods

Modern methods are considered among the most important methods of learning and teaching. The use of data models, field application, and case studies to solve industrial problems.
Evaluation methods
Conducting and teaching the student to study the case and apply practical exercises to solve problems, find solutions and provide economic solutions to him.
d. General and rehabilitative skills transferred (other skills related to employability and personal development). D1 - Scientific research. D2- Practical application of problem solving. D3- Innovation and creativity and the student's orientation to achieve them. D4 - Completion of statistical skills.

10.Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
The first	Two hours	Finding solutions to economic problems Definition of quality	Industrial quality and reduce defects in the product	Theoretical lectures	Problem solving by statistical practical application
Second	Two hours	Understanding control charts	Types of charts	Theoretical lectures	Discussion and examples
Third	Two hours	Finding practical solutions for students	Cause and Effect Dispersion Mean Plot	Theoretical lectures	Training students on diagrams and charts
Fourth	Two hours	Specialist Data	Classified and unclassified	Theoretical lectures	Examples
V	Two hours	Teaching students to find the mean, median, and mode of data	Quality Control Measures	Theoretical lectures	Homework
Sixth	Two hours	Introducing students to types	Pareto Chart	Theoretical lectures	Classwork

		of charts			
Seventh	Two hours	Types of charts	Iterative graduated chart	Theoretical lectures	Discussion and examples
Eighth	Two hours	Types of maps	Range Map	Theoretical lectures	Examples and homework
Ninth	Two hours	Types of maps	Arithmetic mean map	Theoretical lectures	Discussion and examples
X	Two hours	Product defect diagrams	Types of control charts	Theoretical lectures	Tables and graphs
Eleventh	Two hours	Introducing students to the Arithmetic mean	Upper and central and lower limits	Theoretical lectures	Examples and homework
Twelfth	Two hours	Teaching the student how to find product defects.	Monitoring Charts	Theoretical lectures	Examples and homework
Thirteenth	Two hours	Teaching students the types of charts	Types of charts Arithmetic mean map	Theoretical lectures	Examples and homework
Fourteenth	Two hours	Introducing the student to drawing quality control charts	P-chart	Theoretical lectures	Examples and homework
Fifteenth	Two hours	Monitoring Charts	C-chart	Theoretical lectures	Examples and homework

11.Infrastructure

1. Required textbooks	Industrial Management Book / Quality Control Lectures Dr. Saad Sabr Mohammed
2. Main references (sources)	Industrial Management and Quality Control Book / Haider Majid Muftah Laith Fadel Sayed Hussein
A. Recommended books and references (scientific journals, reports, 0000)	Japanese quality kaizen books and references and production control schemes
B. Electronic References, Websites	Prof. Dr. Kamel Mohamed Al-Maghrabi Strategic Management of Industry 2024 / Online

12.Course Development Plan
Adding new topics related to sustainability, industrial strategy, and industrial technology. Artificial intelligence is being incorporated into industrial projects to reduce effort, achieve greater accuracy, and maximize profits. Achieving economic, environmental, and social sustainability is one of the most important goals of industry and industrial decision-makers, as the environment is considered one of the most important sources of production. Preserving it through sustainable industry and economic sustainability enables industrial projects to be realized at the lowest cost and with the highest quality. Developing quality control methods by creating equations using modern computer-based methods and software such as SPSS to ensure accurate results. Quality control by introducing laboratory methods for manufacturing products in general, and for industrial products in particular, as the current industry is moving towards competing in the local market.

Course Description 6

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Teaching Institution	Southern Technical University/Technical Institute - Basra
2. University Department/Centre	Department of Mechanical Technology/Production Mechanics
3. Course title/code	Metals 1 / Metals 2
4. Modes of Attendance offered	Attendance
5. Semester/Year	First semester + second semester
6. Number of hours tuition (total)	30 theoretical hours + 30 practical hours
7. Date of preparation of this description	8/5/2025

8. Course Objectives

- Enabling students to understand metallurgy, including the study of metal properties, their crystalline structure, internal compositions, and solidification processes, in addition to identifying the types of metal alloys and their various ratio compositions.
- Identify the thermal treatments performed on various metals and alloys.
- Identify the types of corrosion and how to prevent them.
- Identify modern types of surface treatments.
- Identify nanomaterials as a modern science.

9. Learning Outcomes, Teaching, Learning and Assessment Method

A- Cognitive objectives

A1- Knowledge of the principles of mineralogy.
A2- Identifying the tests that are performed on it.
A3- Identifying the types of alloys, their properties and uses.
A4- Identifying thermal transfers and their benefits.
A5- Identifying the modern materials used in the industry.

B. Program Skills Objectives
B1 Using laboratory equipment to conduct various tests on metals, such as hardness and impact tests. B2 - Examine the microscopic structures of metals and identify the types of phases in alloys. B3 - Identifying the benefits and uses of nanomaterial in addition to the negatives of use.
Teaching and Learning Methods
-1 Theoretical lectures 2- Laboratory. 3- Systematic training 4- Workshops
Evaluation methods
Daily tests. - Homework. - Evaluating student behavior. - Live discussions during the lecture. - Mid-term exams and final exam for each semester - - Commitment to lectures in terms of attendance and lecture times.
C- Ethical and Moral goals
C1: Facilitating understanding and handling of heat equilibrium diagrams. C2: Student interaction and understanding of the diagrams presented. C3: Student response and interaction with the curriculum content presented.
Teaching and learning methods
In addition to the scheduled lectures, there are other methods used by instructors: 1- Guidance and awareness lectures. 2- Educational lectures. 3- Online seminars and workshops.
Evaluation methods
1- Written tests. 2- Midterm exams. 3- Final exams. 4- Daily assessment
D - General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to use technology.

D2- Developing the student's ability to navigate the job market.
D3- Knowledge of the internet.
D4- Developing the student's ability to engage in communication and discussion.

10.Course Structure					
First Semester					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2 theoretical + 2 practical	The student is familiar with mineralogy, the formation of crystallization nuclei and dendritic arms	Introduction to mineralogy, crystallization, and the effect of crystallization	Theoretical + Practical	Discussion + laboratory report
2	2 theoretical + 2 practical	Identifying defects in various types of castings	Metal block installation and its disadvantages	Theoretical + Practical	Discussion + laboratory report
3	2 theoretical + 2 practical	Knowing the number of active atoms	Atomic packing factor, orientations, and crystal planes	Theoretical + Practical	Discussion + laboratory report
4	2 theoretical + 2 practical	Familiarity with crystal defects	Disadvantages of crystal networks	Theoretical + Practical	Discussion + laboratory report
5	2 theoretical + 2 practical	Learn about elastic forming and its applications and plastic forming and its applications	Elastic and Plastic forming	Theoretical + Practical	Discussion + laboratory report

6	2 theoretical + 2 practical	Knowing strain hardening, its defects, and how to treat it	Strain hardening and cold and hot forming	Theoretical + Practical	Discussion + laboratory report
7	2 theoretical + 2 practical	Knowing how crystal growth begins from the nucleus and the convergence of the dendritic arms	Recovery, recrystallization and crystal growth	Theoretical + Practical	Discussion + laboratory report
8	2 theoretical + 2 practical	Learn how to create a stress strain curve and calculate the modulus of elasticity from	Stress-strain curves and types of fractures	Theoretical + Practical	Discussion + laboratory report
9	2 theoretical + 2 practical	Identifying the causes of fatigue	Fatigue and fatigue resistant of materials	Theoretical + Practical	Discussion + laboratory report
10	2 theoretical + 2 practical	Learn about the creep curve, its stages, and how it occurs.	Creep and its mechanism	Theoretical + Practical	Discussion + laboratory report
11	2 theoretical + 2 practical	The student's knowledge and distinction between compounds, phases, and solid solutions	Compound, phase, solid solution, equilibrium, alloy formation	Theoretical + Practical	Discussion + laboratory report

12	2 theoretical + 2 practical	Identify diagrams, methods of creating them, and calculating solid and liquid phases	Thermal equilibrium diagram for a completely dissolved binary system in the liquid and solid states and the eutectic diagram	Theoretical + Practical	Discussion + laboratory report
13	2 theoretical + 2 practical	Learn about diagrams, how to create them, and calculate solid and liquid phases.	Thermal equilibrium diagram for a binary system of completely soluble in the liquid state and limited solubility in the solid state.	Theoretical + Practical	Discussion + laboratory report
14	2 theoretical + 2 practical	Learn about diagrams, how to create them, and calculate solid and liquid phases	Thermal equilibrium diagram for a binary system that is completely dissolved in the liquid state and a chemical compound in the frozen state	Theoretical + Practical	Discussion + laboratory report

15	2 theoretical + 2 practical	Learn about the plan, its stages, and the features of each stage.	Iron, thermal equilibrium diagram of the iron-carbon system	Theoretical + Practical	Discussion + laboratory report

10.Course Structure					
Second Semester					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2 theoretical + 2 practical	Identify the plan, its stages, and the features of each stage	Iron-carbon diagram completion	Theoretical + Practical	Discussion + laboratory report
2	2 theoretical + 2 practical	Study of the formation of austenite and its transformation into pearlite	Formation of austenite and transformation mechanism of perlite	Theoretical + Practical	Discussion + laboratory report
3	2 theoretical + 2 practical	Knowing the effect of temperature and cooling rate on the austenite transformation	Austenite transformation	Theoretical + Practical	Discussion + laboratory report
4	2 theoretical + 2 practical	Learn about the types of thermal treatment	Thermal treatment	Theoretical + Practical	Discussion + laboratory report

5	2 theoretical + 2 practical	Learn about the types of thermal treatment	Complementing thermal and subzero treatment	Theoretical + Practical	Discussion + laboratory report
6	2 theoretical + 2 practical	Identifying surface hardening by carburizing and nitriding.	Surface hardening	Theoretical + Practical	Discussion + laboratory report
7	2 theoretical + 2 practical	Identifying the effect of adding alloying elements to steel	Alloy steel	Theoretical + Practical	Discussion + laboratory report
8	2 theoretical + 2 practical	Familiarity with its properties and uses	Stainless steel	Theoretical + Practical	Discussion + laboratory report
9	2 theoretical + 2 practical	Identify the types of cast iron and their uses	Cast iron	Theoretical + Practical	Discussion + laboratory report
10	2 theoretical + 2 practical	Identifying the types of cast iron and their uses	Cast iron supplement	Theoretical + Practical	Discussion + laboratory report
11	2 theoretical + 2 practical	Identifying the types of corrosion and ways to prevent it	Corrosion	Theoretical + Practical	Discussion + laboratory report

12	2 theoretical + 2 practical	Identify the types of corrosion and ways to prevent it	Cavernous and galvanic corrosion	Theoretical + Practical	Discussion + laboratory report
13	2 theoretical + 2 practical	Softening the atmosphere for the purpose of reducing corrosion	Ocean softening and corrosion prevention	Theoretical + Practical	Discussion + laboratory report
14	2 theoretical + 2 practical	Learn about the uses of laser, plasma, and anodic radiation.	Surface treatments using modern technologies	Theoretical + Practical	Discussion + laboratory report
15	2 theoretical + 2 practical	Learn about its types, uses and disadvantages	Introduction to nanomaterial	Theoretical + Practical	Discussion + laboratory report

11.Infrastructure	
1. Required textbooks	Principles of Metallurgical Engineering by Dr. Hussein Baqer,
2. Main references (sources)	Principles of Metallurgical Engineering by Dr. Hussein Baqer, Metallurgy by Dr. Imad Mohammed Ibrahim Khalil
A. Recommended books and references (scientific journals, reports)	Engineering materials 1 Nanotechnologies principles, applications
B. Electronic References, Websites	Northern Technical University / Mosul Technical Institute University of Technology / Materials Engineering

12.Course Development Plan
- Reviewing and monitoring the development of metallurgy and modern technologies, including heat treatment and surface treatment, to achieve the best metal specifications. - Writing research and participating in scientific conferences in the field of metallurgy, in addition to in-person and online workshops in this field.

Course Description 7

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he or she has made the most of the available learning opportunities.

1. Educational Institution	Southern Technical University
2. Scientific Department / Center Basra Technical Institute	Department of Mechanical/Production Technologies
3. Name of Academic Program	Industrial Drawing 1 + Industrial Drawing 2
4. Available Attendance Forms	In-person learning
5. Semester/Year	First +Second Semester
6. Number of credit hours	45hours per semester
7. Date of Preparation of Description	7/5/2025
8. Course Objectives	
1.Knowing how to deal with the computer drawing program (AutoCAD). 2.Learning the standard specifications. 3.Knowledge of engineering symbols and terms. 4.Acquiring the necessary skill to read technical drawings. 5.Drawing simple and complex mechanical parts and the most encountered in practical life.	

9.Course Outcomes and Methods of Teaching, Learning and Assessment
A. Cognitive Objects A1- The graduate must have the ability to read engineering drawings. A2- The ability to identify mechanical parts and their assembly methods. A3- The ability to transform these parts into a product by reading and analyzing drawings. A4- Knowledge of the types of metals from which these parts are made. A5- Knowledge of the geometric tolerances required between mechanical parts for them to function in a geometric manner. A6- The ability to assemble parts after they have been manufactured.
B. Program Skills Objectives B1 – The ability to divide and assemble engineering equipment. B2 – The ability to draw all parts of machinery and equipment. B3 – Engineering discussions and expressing opinion. B4- Assisting in finding solutions and suggest appropriate alternatives.
Teaching and learning methods
Lectures include a theoretical aspect of the topic and the creation of drawings based on the curriculum. They also include viewing pre-prepared illustrative models for each topic and displaying images of the equipment required to create the drawings.
Evaluation methods
Implementation of daily computer drawings and daily evaluation in addition to the scheduled exams.
C- Ethical and Moral goals. C1- Communication skills and information technology. C2- Possess skill in knowing the engineering symbols of mechanical drawing and international standard ratios. C3- Knowledge of the special laws for the design of gears of various kinds. C4- The skill of dealing with all drawing programs (AutoCAD).
Evaluation methods
Implementation of daily drawings in addition to the semi-semester and final exam in addition to theoretical research on curriculum topics.

d. General and rehabilitative skills transferred (other skills related to employability and personal development).
D1- The ability to absorb information and understand the symbols of the subject.
D2- The ability to carry out any mechanical drawing of any equipment. D3-
D3-The ability to make a decision through the information he possesses about the mechanical drawing.
D4- Preparing a technical staff with the ability to deal with all mechanical drawings by reading and implementing them

10. Course Structure					
First Semester course structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	The student should be able to know the types of geometric lines - projections of sections - dimensional mode using the computer	General review of first grade topics: lines, dimensions, projections, and sections using AutoCAD.	Practical application of computer drawing	Panel implementation
2+3	3	The student should be able to know the methods of fastening using screws and nuts.	Connecting methods using screws and nuts	Computer drawing	Implementation of the drawing by students

4+5	3	The student should be able to know the methods of linking using links and their types.	Linking by hooks, their types and uses	Practical application in the computer	Panel implementation
6+7	3	The student should be able to recognize welding connection and welding symbols.	Linking by welding and welding codes	Drawing by computer in front of students	Panel execution
8+9	3	The student should be able to identify rivet fastening, rivet shapes and fastening types.	Rivet fastening, rivet shapes and fastening types	Drawing by computer in front of students	Panel execution
10	3	The student should be able to know how to disassemble and assemble a mechanical crane.	Mechanical crane assembly and disassembly	Drawing by computer in front of students	Panel execution
11	3	The student should be able to identify the types of springs and their uses.	Springs, types and uses	Drawing by computer board in front of the students for a compression spring	Panel execution

12	3	The student should be able to know how to disassemble and assemble an exhaust valve.	Exhaust valve segmentation and assembly	Implementation of the drawing in front of students	Panel execution
13	3	The student should be able to know the connections of the coupling columns and their types	Couplings, their types and uses	Implementation of the drawing in front of students	Implementation of the drawing by students
14	3	The student should be able to know the types of clutches and their uses	Types of clutches and their uses	Implementation of the drawing in front of students	Implementation of the drawing by students
15	3	The student should be able to know the types of loading chairs	Types of loading chairs	Implementation of the drawing in front of students for a frictional loading chair	Implementation of the drawing by students
Second semester course structure					
1	3	The student should be able to identify the types of pulleys and belts and their uses.	Types of pulleys and belts and their uses	Implement the board in front of the students, which includes assembling parts containing a pulley.	Implementation of the drawing by students

2+3	3	The student should be able to know the types of gears and their laws.	Fair gears, their laws and uses	Implementation of a board for a gear fixed on a shaft using a key in front of the students	Implementation of the drawing by students
4+5	3	The student should be able to identify bevel gears and their uses.	Bevel gears and their uses	Implementation of an assembly drawing of a meshed bevel gear mounted on a flange in front of the students	Implementation of the drawing by students
6+7	3	The student should be able to know Autodesk Anifor software.	Introduction to Autodesk Anifor	Explanation of the program and how to use	
8+9	3	The student should be able to know the environment of two-dimensional drawing	Two-dimensional drawing environment	Explain the subject with drawing	Implementation of the drawing by students
10+11		The student should be able to know the assembly environment of the equipment	Knowledge of the assembly environment of the equipment	Explanation of the subject with drawing an assembly board	Implementation of the drawing by students

12	3	The student should be able to understand the environment of mechanical analysis and motion.	Mechanical Analysis and Movement Environment	Explain the topic with an assembly drawing of a machine containing moving parts.	Implementation of the drawing by students
13	3	The student should be able to know the environment of additions to the graphics.	Additions to mechanical drawings	Executing a drawing containing additions in front of students	Implementation of the drawing by students
14+15	3	Specialized project	Distributing projects to students with an explanation of each project	Explain the details of each project to the groups	Project Implementation

11.Infastructure	
1. Required textbooks	Mechanical Drawing /Machinery Drawing / Industrial Drawing Binding
2. Main references (sources)	Engineering drawing –machine drawing
A. Recommended books and references (scientific journals, reports,)	Engineering drawing –machine drawing
B. Electronic References, Websites	My lectures on the channel

12.Course Development Plan
- Using modern software for engineering drawing.