

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



Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University

Faculty/Institute: Al-Dewanayah Technical Institute

Scientific Department: Mechanical Techniques

Academic or Professional Program Name:

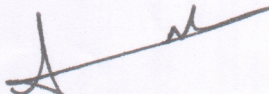
Final Certificate Name:

Academic System:

Description Preparation Date:

File Completion Date:

Signature:



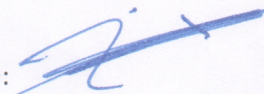
Head of Department Name:

Lecturer Dr. Areej Ghazi

Abdulshaheed

Date: 27/3/2024

Signature:



Scientific Associate Name:

Assistant Professor Afrah

Abdulwahid Habib

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Assistant Professor Dr. Afrah Rahim Eidan

Date:

Signature:



Approval of the Dean

Assistant Professor Dr. Zaid Maan Hasan Al-Dulaimi

1. Program Vision

Program vision is written here as stated in the university's catalogue and website.

2. Program Mission

Program mission is written here as stated in the university's catalogue and website.

3. Program Objectives

General statements describing what the program or institution intends to achieve.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

5. Other external influences

Is there a sponsor for the program?

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				

Department Requirements				
Summer Training				
Other				

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

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Production – first stage		Manufacturing processes(1)	2	2
		Material properties	2	0
		Workshops(1)		8
		Mechanics	2	3
		Mathematics	2	0
		Computer application(1)	2	2
		Engineering drawing	0	3
		Electrical technology	1	2
		Human rights	2	0
		English language	1	0
Production – second stage		Machine Parts	3	0
		Manufacturing Processes(2)	2	2
		Metallurgy	2	2
		Workshops(2)	0	8
		Project	0	2
		Industrial drawing	0	3
		Management & occupational safety	2	0
		Computer application(2)	2	2
		English language	1	0
		Crimes of the Baath regime	2	0
Maintenance and operation – second stage		Machine Parts	3	0
		Power transmission systems	2	2

		Control	2	2
		Maintenance and operation	0	6
		Project	0	2
		Electricity technology	1	2
		Management & occupational safety	2	0
		Computer application(2)	2	2
		English language	1	0
		Crimes of the Baath regime	2	0

8. Expected learning outcomes of the program	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods
Implemented at all stages of the program in general.

11. Faculty
Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer

Professional Development
Mentoring new faculty members
Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion
(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program
State briefly the sources of information about the program.

14. Program Development Plan

Program Skills Outline																			
				Required program Learning outcomes															
Year/ Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics							
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
Production – first stage		Manufacturing processes(1)	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Material properties	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Workshops(1)	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Mechanics	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Mathematics	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Computer application(1)	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Engineering drawing	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Electrical technology	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		Human rights	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
		English language	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√

Production – second stage	Machine Parts	Basic	√	√	√	√	√	√	√		√	√		√	√	√		
	Manufacturing Processes(2)	Basic	√	√	√	√	√	√	√	√		√	√		√	√	√	√
	Metallurgy	Basic	√	√	√	√	√	√	√	√		√	√		√	√	√	√
	Workshops(2)	Basic	√	√	√	√	√	√	√	√		√	√		√	√	√	√
	Project	Basic	√	√	√	√	√	√			√	√			√	√	√	
	Industrial drawing	Basic	√	√	√	√	√	√	√	√		√	√		√	√	√	√
	Management & occupational safety	Basic	√	√	√	√	√	√	√	√		√	√		√	√	√	
	Computer application(2)	Basic	√	√	√	√	√	√			√	√			√	√	√	
	English language	Basic	√	√	√	√	√	√	√	√		√	√		√	√	√	√
	Crimes of the Baath regime	Basic	√	√	√	√	√	√	√			√	√		√	√	√	
Maintenance and operation – second stage	Machine Parts	Basic	√	√	√	√	√	√	√		√	√		√	√	√		
	Power transmission systems	Basic	√	√	√	√	√	√	√		√	√		√	√	√	√	
	Control	Basic	√	√	√	√	√	√	√		√	√		√	√	√	√	
	Maintenance and operation	Basic	√	√	√	√	√	√	√		√	√		√	√	√	√	
	Project	Basic	√	√	√	√	√	√			√	√			√	√	√	

	Electricity technology	Basic	√	√	√	√	√	√	√			√	√			√	√	√	
	Management & occupational safety	Basic	√	√	√	√	√	√	√	√		√	√			√	√	√	√
	Computer application(2)	Basic	√	√	√	√	√	√	√			√	√			√	√	√	
	English language	Basic	√	√	√	√	√	√	√	√		√	√			√	√	√	√
	Crimes of the Baath regime	Basic	√	√	√	√	√	√	√			√	√			√	√	√	

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

Course Description Form

1. Course Name:	
Manufacturing processes(1)	
2. Course Code:	
3. Semester / Year:	
First	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdulkadhum Salman Sangor Email:	
8. Course Objectives	
<p>Course Objectives</p>	<p>Graduating an intermediate cadre capable of working in the fields of manufacturing and production to contribute to the following tasks:</p> <ol style="list-style-type: none"> 1- The ability to analyze processes into operating components. 2- Numbers of technological path between production units. 3- Preparing operation cards and orders for each unit and each machine, and calculating the operating time and loading programs for the units. 4- Determine the elements of control and quality control. 5- Conduct preliminary calculations of operating costs.

9. Teaching and Learning Strategies

Strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Definition of measurement and units of measurement, error and its causes, methods of measuring main dimensions, simple conveyor measuring devices.	2+1	1
2	2	A2	Measuring feet (probes), their parts, uses, and types.	2+1	1
3	2	D 1	Micrometers, their types, uses, parts, and the idea of how a micrometer works.	2+1	1
4	2	C2	Measuring molds and their uses, types, and how to use them.	2+1	1
5	2	A3	Measuring angles and side shapes, tools for measuring angles and measuring cups (dabaa) and their types.	2+1	1
6	2	A4	Method of measuring screw elements, external and internal diameters, measuring step and step diameter, electronic mechanical comparison devices.	2+1	1
7	2	B2	Optical device, some modern measurement methods (acoustic frequency measuring devices, digital optical).	2+1	1
8	2	C1	Files and their role in industrial development, the process of slicing, the tools used and the processes involved in the filing process, files used and their specifications, machines and their types and methods of attaching crafts to them, uses of files, and how to clean files.	2+1	1
9	2	D2	Cutting with a saw, the conditions that must be met in the sawing process, the saw weapon, the crowns and their types, the teeth, the method of sharpening and maintaining them, the types of manual hammer heads and the method of installing them.	2+1	1
10	2	A2	Drilling and grinding, types of drills, types of primers, types of primers, how to perform the drilling and grinding process.	2+1	1
11	2	B 1	Models, their types, wood used in their manufacture, and the conditions that must be met in the model.	2+1	1
12	2	C2	Tools and devices used in making the model, box molds, and how to design a simple model.	2+1	1
13	2	A3	Plumbing, historical overview, main methods of plumbing (cast casting, sand casting, metal mold casting, other methods	2+1	1

			of plumbing) Advantages of the plumbing process.		
14	2	D3	Plumbing sand, plumbing sand specifications, components, plumbing sand, devices used and additives to plumbing sand.	2+1	1
15	2	B2	Dumps and tools used in preparing sand molds, the process of molding a simple model and the last bench, the parasitic molds and the model molds used	2+1	1
16	2	C1	Pulp, its types, pulp sand, mixture ratios and materials added to it, stages of its work (mixing and preparing sand, making balls, drying it), the benefit of the drying process, ovens or methods of drying balls and their equipment.	2+1	1
17	2	D4	Casting with metal molds, its types, centrifugal casting, and its types.	2+1	1
18	2	A2	Lost wax plumbing, continuous plumbing, shell plumbing.	2+1	1
19	2	B 1	Metal smelting and its foundations, types of smelting furnaces, blast furnace, main dimensions and method of operation, blast furnace, electric arc furnace, reflector furnace, rotary furnace.	2+1	1
20	2	C2	Casting of castings, its equipment and foundations, cleaning of castings, casting defects, inspection of castings.	2+1	1
21	2	A3	Welding, foundations of metal welding, clarification of the main methods of welding (pressure welding, electric arc fusion welding, other methods of fusion welding, flash welding and caustic welding), types of welding joints.	2+1	1
22	2	A4	Hot pressure welding, including (electrical resistance welding, including spot and line welding, flash welding), cold pressure welding, pressure welding using explosives, and pressure welding using ultrasonic waves.	2+1	1
23	2	B2	Fusion welding and gas welding, oxy-hydrogen welding and oxy-acetylene welding, types of flame, right-hand welding and left-hand welding, cutting with oxy-acetylene.	2+1	1
24	2	D3	Arc welding, welding current, direct and reverse polarity method, types of electrodes, packaging of metal electrodes and their types.	2+1	1
25	2	A2	Electrode movement, methods of isolating electrodes and the welding area, electric arc welding using protective gases (carbon dioxide welding, arcon tig welding, brazing welding)	2+1	1
26	2	B3	Atomic hydrogen arc welding, arc welding, fusion welding 3.	2+1	1
27	2	A4	Temperature welding, caustic welding (mortar welding, plumbing welding) and some modern types of welding (laser welding, electron beam welding).	2+1	1

28	2	C1	Welding defects, welding tests.	2+1	1
29	2	D4	Metal forming, the theory of forming, the foundations of cold and hot forging, blacksmithing, the foundations of blacksmithing and its methods (manual, mechanical), blacksmithing equipment, manual and mechanical, blacksmithing elements.	2+1	1
30	2	C2	Special blacksmithing methods, blacksmithing molds and their manufacture, effective force, explanation of the different blacksmithing operations (contact, methods of different geometric sections in cutting operations, making simple steps, forming various artifacts).	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<p>1- Introduction to production engineering Written by – Hassan Hussein Fahmy, Jalal Shawqi (1966)</p> <p>2- Principles of metal casting Translation – Dr. Salah al-Din Muhammad al-Muhanni</p> <p>3- Methods of forming metals Written by - Dr. Anwar Abdel Wahed (1963).</p> <p>4- Manufacturing methods Written by - Dr. Arif Abu Safia, Dr. Abdul Razzaq Ismail Khadr</p> <p>5- Ignition of metals - technological foundations Written by: Abdel Moneim Akef (1977).</p> <p>6- Principles of milling operations Written by – Afrutin, Translated by – Muhammad Abdel Hamid Al-Rifai.</p>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Material properties	
2. Course Code:	
3. Semester / Year:	
First	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdullah Khawaaf Jaber Email:	
8. Course Objectives	
Course Objectives	<p>1- Identifying the properties of engineering materials, which are the language or phrases through which the designer explains his needs for the material that will resist loads, breakage, disintegration, chemical reactions, radiation, and heat.</p> <p>2- It is useful in considering them as a basis for comparing the regularity of different samples of the same material. It is noted that no two pieces of the same material have exactly the same properties, and this is due to many factors to which the material is exposed during manufacturing, or as a result of the forming processes, or to time factors, or to changes in temperature or humidity, or to other factors.</p>

9. Teaching and Learning Strategies

Strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Definition of engineering materials.	2+1	1
2	2	A2	Atom, element, types of bonds in engineering materials.	2+1	1
3	2	D 1	Crystalline and amorphous materials.	2+1	1
4	2	C2	Crystal forms (H.C.P) (F.C.C) (B.C.C).	2+1	1
5	2	A3	Mechanical properties of materials. (Stress, strain, stress-strain curve, ductility, collapse).	2+1	1
6	2	A4	Hardness, hardness test.	2+1	1
7	2	B2	Continuation.	2+1	1
8	2	C1	Durability, durability tests.	2+1	1
9	2	D2	Thermal properties of materials (thermal expansion, thermal conductivity)	2+1	1
10	2	A2	Electrical properties of materials (ionic materials, insulating materials, metallic materials, factors affecting conductivity).	2+1	1
11	2	B 1	Magnetic properties of materials (ferromagnetic materials, paramagnetic materials, diamagnetic materials, magnetic retardation, factors affecting magnetism).	2+1	1
12	2	C2	Chemical properties of materials (corrosion, electrochemical series, oxidation)	2+1	1
13	2	A3	Iron, its most important ores, extraction, blast furnace, transformers.	2+1	1
14	2	D3	Carbon steel, its most important types, properties, and uses.	2+1	1
15	2	B2	Alloy steel, its most important types, properties, and uses.	2+1	1
16	2	C1	Cast iron, its types, properties, and uses.	2+1	1
17	2	D4	supplement	2+1	1
18	2	A2	Copper, its alloys, properties, and uses.	2+1	1
19	2	B 1	Aluminum, its alloys, properties, and uses.	2+1	1
20	2	C2	Nickel, its alloys, properties, and uses.	2+1	1
21	2	A3	Tin, its alloys, properties, and uses. Zinc, its alloys, properties, and uses. Manganese, its alloys, properties, and uses.	2+1	1
22	2	A4	Other nonferrous alloys (white metals, bearing alloys)	2+1	1
23	2	B2	Powder metallurgy	2+1	1

24	2	D3	(Methods of obtaining metal powders, mechanical methods, physical and chemical methods, natural, mechanical and chemical properties of powders.	2+1	1
25	2	A2	Powder pressing, sintering process.	2+1	1
26	2	B3	Ceramic materials	2+1	1
27	2	A4	Glass, its types, manufacture, and uses.	2+1	1
28	2	C1	Concrete, its industrial uses.	2+1	1
29	2	D4	Polymers, polymer molecules, types of polymer.	2+1	1
30	2	C2	Properties and uses of plastics.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1- Engineering principles of metals and materials.
Q. Bailey, translation - Dr. Hussein Baqir, may God have mercy on him.

2- Engineering metallurgy (applied physical metallurgy).
a. Hickens, translation - George Yacoub, Reda Muhammad Ali

3- Metals: their structure, properties and thermal coefficients.
Dr.. C. Degerol. a . Uliman translation - Dr. Jaafar Taher Al-Haidari, Adnan Nehme.

4- Engineering materials and their tests.
Dr.. Qahtan Khalaf Al-Khazraji, Adel Mahmoud Hassan, Abdul-Jawad Muhammad Al-Sharif

5- Properties of engineering materials.
Dr.. Sabah Amin Karakji, Dr. Walid Muhammad Saleh, Dr. Talib Hussein Al-Sharif.

6- Physics of minerals.
Dr.. Abdul Razzaq Ismail Khudair.

English sources:
1-Basic Engineering Metallurgy Theories Principles and application Aarkeyser Keyser
2- Introduction to structures and metals, V Sivarajan
3-Introduction to physical metallurgy, Avnet.

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

Course Description Form

1. Course Name:	
Mechanics	
2. Course Code:	
3. Semester / Year:	
First	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr.Hameed Shaker Traad Email:	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1. Introducing students to the principles and fundamentals of engineering mechanics 2. Identify the different methods for performing calculations related to forces and their effects on two and 3D systems. 3. Explain that the topic represents a very important introduction to other topics for the subsequent stages of study <p>Study the student and build a scientific base for the student to ensure that he can understand the relevant materials in the later stages.</p>
9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Static, fundamental concepts, Force, Scalars and, Vectors, Units, Force polygon, Cartesian Components.	2+1	1
2	2	A2	Analysis of Forces	2+1	1
3	2	D 1	Resultant of Concurrent , Coplanar Force system (2-D)	2+1	1
4	2	C2	Moments	2+1	1
5	2	A3	Couples , transformation of the Couple and the force	2+1	1
6	2	A4	Resultant of non –Concurrent, Coplanar force system (3-D).	2+1	1
7	2	B2	Equilibrium , free body diagram (F.B.D.)	2+1	1
8	2	C1	Equilibrium Conditions (2-D)	2+1	1
9	2	D2	Equilibrium Conditions (3-D)	2+1	1
10	2	A2	Friction, Dry Friction	2+1	1
11	2	B 1	Center of Gravity, Centroid (length, area), Centroid of Simple area	2+1	1
12	2	C2	Centroids of Composite areas.	2+1	1
13	2	A3	Moment of inertia (Simple and Composite areas).	2+1	1
14	2	D3	2-Dynamics type of motion, Linear motion with constant speed.	2+1	1
15	2	B2	Linear motion with Constant acceleration.	2+1	1
16	2	C1	Newton's Second Law	2+1	1
17	2	D4	Curvilinear motion	2+1	1
18	2	A2	Angular motion, Relative Motion.	2+1	1
19	2	B 1	Work , Energy, Power	2+1	1
20	2	C2	3-Strength of material: Fundamental concept, Loads, Stress, Strain, Elasticity, Plasticity, Deformation.	2+1	1
21	2	A3	Hook's Law, Stress -strain curve, type of stress.	2+1	1
22	2	A4	Normal stress due to an axial load on 1- Uniformam Cross section area 2- Variable cross section area.	2+1	1
23	2	B2	Shear Stress	2+1	1
24	2	D3	Torsional Stress	2+1	1
25	2	A2	Thermal Stress	2+1	1
26	2	B3	Beams, types of loads, types of beams.	2+1	1
27	2	A4	Shear force (S.F.) & bending moment (B.M.) of Simple supported beam under an –axial load.	2+1	1
28	2	C1	Shear force (S.F.) & bending moment (B.M.) of Simple supported beam under uniform distributed Load.	2+1	1

29	2	D4	Shear force (S.F.) & bending moment (B.M.) of cantilever beam under an –axial load.	2+1	1
30	2	C2	Shear force (S.F.) & bending moment (B.M.) of cantilever beam under uniform distributed Load.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<p>1-Engineerig Mechanics Static & dynamics Bed ford & fowler <u>u</u>thed 2005. 4</p> <p>2-Higdon & Stiles Engineering Machine 3th ed 1968</p> <p>3-Singh , Sadhu Strength of Martial 4th ed 2007 9th</p> <p>4- Engineering Mechanics by singer .</p>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Mathematics	
2. Course Code:	
3. Semester / Year:	
First	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4	
7. Course administrator's name (mention all, if more than one name)	
Name: Israa Abduljaleel Hussein Email:	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1. Acquire the mathematical knowledge necessary for the prescribed topics and understand the meanings behind each mathematical concept 2. Develop an understanding of the nature of the foundations of mathematics as an integrated system of basic mathematical concepts, which will provide a significant basis for understanding other mathematical disciplines 3. Apply the steps to solve a mathematical problem by analyzing the problem and developing and implementing a solution plan
9. Teaching and Learning Strategies	
Strategy	

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1&2	2	A1	Determinants and their properties, solving simultaneous equations using the determinant method (Cramer).	2+1	1
3, 4 &5	2	A2	Differentiation, algebra of derivatives, multiple functions	2+1	1
6, 7&8	2	D 1	Trigonometric, logarithmic, and exponential functions and their derivatives and implicit functions, the chain rule.	2+1	1
9, 10&11	2	C2	Drawing functions, drawing trigonometric functions and maximum and minimum limits.	2+1	1
12 &13	2	A3	Applications of physical differentiation, velocity and acceleration, and engineering applications of differentiation.	2+1	1
14&15	2	A4	Integration, laws, and its relationship to differentiation, definite and indefinite integration.	2+1	1
16,17&18	2	B2	Implicit integration, geometric applications of integration (areas and volumes) and physics	2+1	1
19 &20	2	C1	General methods of integration include substitution and partial integration and the use of exponential and logarithmic partial fractions.	2+1	1
21, 22, 23 24	2	D2	Discrete, homogeneous and linear differential equations with their various applications.	2+1	1
25, 26, 27&28	2	A2	Vectors (direct and quantitative multiplication and calculating angles between vectors.	2+1	1
29&30	2	B 1	Statistics (principles) and probability theory	2+1	1
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc.					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

1. Course Name:					
Computer Applications(1)					
2. Course Code:					
3. Semester / Year:					
First					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ameer Abdulkadhum Odeh					
Email:					
8. Course Objectives					
Course Objectives					
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Introduction to computers: their generations, components: hardware and software (system software and application software).	2+1	1
2-15	2	A2	*Windows operating system: The concept of the Windows system, its advantages and basic requirements, operating the system, components of the main desktop screen, the concept of icons, the method of dealing with mouse activities, the importance and components of the Taskbar, making use of Start to enter programs, the concept of	2+1	1

			<p>loaded tasks, exiting the system. And turn the calculator off (Shut Down).</p> <p>*The concept of the window for any program and identifying its main components, dealing with desktop icons such as (My Document; My Computer; Recycle Bin).</p> <p>* Getting to know My Computer in terms of disks, folders and files, how to deal with formatting floppy disks, copying folders and files, dealing with the trash, and how to delete and retrieve files through what the trash can provides in this regard.</p> <p>* Take advantage of the Control Panel programs, such as the (Mouse) icon, the screen saver control icon, changing the appearance of the desktop background, and (Program) in adding and deleting programs.</p> <p>* Taking advantage of the Run option to execute programs appropriately, as well as switching to the system signal (Ms-Dos) and dealing with its commands.</p> <p>*Use entertainment programs such as (Window Media Player) to play movies</p> <p>*Use of additional programs such as the calculator.</p> <p>*Dealing with the drawing program (Paint) to create, save, and retrieve drawings through the commands it provides.</p> <p>*Dealing with the Notes window (Notepad; Wordpad) in writing texts, saving them, retrieving them, printing them, and changing their printing style and formatting.</p> <p>* Learn how to get help and its different methods.</p>		
16	2	D 1	An introduction to AutoCAD, version 2000, and an explanation of the program interface.	2+1	1
17	2	C2	Screen settings (Snap, Limit, Grid, Pan, Zoom,...).	2+1	1
18&19	2	A3	Draw menu.	2+1	1
20&21	2	A4	List of revisions (modify).	2+1	1
22	2	B2	Object Snap menu.	2+1	1
23	2	C1	Layers.	2+1	1
24	2	D2	Dimensions.	2+1	1
25	2	A2	Writing .	2+1	1
26	2	B 1	Store files, import files from other programs, and export them.	2+1	1
27	2	C3	Make blocks and import parts from other programs.	2+1	1

28	2	A3	Draw a plan for the department's specialization.	2+1	1
29	2	D3	Draw a section of that diagram.	2+1	1
30	2	B2	Printing, copying and extracting files on the plotter.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Electrical technology					
2. Course Code:					
3. Semester / Year:					
First					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Areej Ghazi Abdulshaheed Email:					
8. Course Objectives					
Course Objectives			Studying the foundations of electricity technology and various electric motors, the theory of their operation, methods of operation, and how to repair and maintain electrical faults.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Electrical units and symbols, simple electrical circuit, current intensity of electromotive force.	2+1	1
2	2	A2	Potential difference, Ohm's law, methods of connecting resistors (series, parallel, compound)	2+1	1

3	2	D 1	Practical examples of solving electrical circuits.	2+1	1
4	2	C2	Second: Alternating current (variable)	2+1	1
5	2	A3	Methods of obtaining alternating current, types of electrical power plants.	2+1	1
6	2	A4	Sine wave, current waveform with time and frequency, definition of the effective value of alternating current and voltage.	2+1	1
7	2	B2	Magnetic field, field properties, properties of magnetism, types of magnetic materials, definitions (field intensity, field strength, magnetic driving force).	2+1	1
8	2	C1	The magnetic effect of electric current. Applications on the use of the property of the magnetic force of attraction.	2+1	1
9	2	D2	Single-phase alternating current, three-phase alternating current, phase identification method, external overall wiring system.	2+1	1
10	2	A2	Method of connection in the form of a star (Y), face current and line current from the star, face voltage and line voltage from the star, power in the case of a three-phase system, method of connecting electrical loads.	2+1	1
11	2	B 1	Delta (Δ) connection method, face current and line current in the case of delta, face voltage and line voltage, power, applications and examples of star and delta connection.	2+1	1
12	2	C2	Fifth: Electrical transformers	2+1	1
13	2	A3	Sixth: AC motors have three phases.	2+1	1
14	2	D3	Types of motors, three-phase induction motors, their types, and uses.	2+1	1
15	2	B2	Installation of impact motors (tri-phase), principle of rotary magnet theory, principle of motor operation theory.	2+1	1
16	2	C1	Methods of starting movement in three-phase induction motors.	2+1	1
17	2	D4	Methods of control and control in changing the speed of three-phase induction motors (changing poles, changing source voltage, changing oscillation, changing direction of rotation)	2+1	1
18	2	A2	Seventh: Single-phase alternating current motors	2+1	1
19	2	B 1	Fuses, their types, melting coefficient	2+1	1
20	2	C2	Cycle breakers, thermal monitor against overload.	2+1	1
21	2	A3	Methods used to identify malfunctions: The engine is unable to rotate. The engine rotates at a speed less than its ideal speed.	2+1	1
22	2	A4	The engine temperature rises during rotation, the engine rotates noisily.	2+1	1
23	2	B2	How to treat and repair each of the previous malfunctions.	2+1	1
24	2	D3	Command and control circuits used to operate engines manually and automatically.	2+1	1

25	2	A2	Tenth: Safety and maintenance of engines	2+1	1
26	2	B3	Engine maintenance methods, necessary time periods, and types of maintenance	2+1	1
27-30	2	A4	Oiling, lubricating, cleaning, axle bearings.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-Electrical Technology By - Theraga 2- Electrical Technology By - Hughes 3- Electrical Technology By - Erick
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Engineering drawing					
2. Course Code:					
3. Semester / Year:					
First					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3					
7. Course administrator's name (mention all, if more than one name)					
Name: Ohood Ali Email:					
8. Course Objectives					
Course Objectives			Introducing the student to the importance of engineering drawing and its relationship to other engineering subjects		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	A1	The importance of engineering drawing, the importance of using a computer to implement engineering drawing, standard drawing board sizes, an overview of the AutoCAD program.	2+1	1
2	3	A2	Preparing for computer drawing Title Block	2+1	1

3	3	D 1	Drawing geometric shapes using the computer	2+1	1
4&5	3	C2	Graphic modifications, computer drawing aids	2+1	1
6-8	3	A3	Types of lines for engineering drawing, engineering operations, and setting dimensions.	2+1	1
9	3	A4	Perspective drawing, a perspective drawing that contains a circle represented by an oval.	2+1	1
10&11	3	B2	Projection theory, drawing simplified projections.	2+1	1
12-15	3	C1	Main projections, even angles, drawing according to the theory of the first even angle of projection, drawing according to the theory of the third even angle of projection.	2+1	1
16&17	3	D2	Draw the three main projections at even angles and note the difference between them.	2+1	1
18&19	3	A2	Deducing the third projection from the two projections.	2+1	1
20&21	3	B 1	Inferring perspective from two or three projections.	2+1	1
22&23	3	C2	Cutting theory, cutting shapes and lines according to the type of material, drawing cut sections.	2+1	1
24&25	3	A3	Drawing projections cut from one specific projection	2+1	1
26&27	3	D3	Partially cropped project drawing	2+1	1
28-30	3	B2	Drawing a half-cut projection, drawing winding sections.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Human rights	
2. Course Code:	
3. Semester / Year:	
First	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2	
7. Course administrator's name (mention all, if more than one name)	
Name: Alaa Mohammed Muhaimid Email:	
8. Course Objectives	
Course Objectives	<p>Institute students are expected to achieve the following general objectives:</p> <ul style="list-style-type: none"> - That the student believes in the importance of human rights education in our lives. - That the student believes in the importance of his future role in human rights education. <p>The student must have the attitudes and values contained in the human rights education curriculum.</p>
9. Teaching and Learning Strategies	
Strategy	
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Human rights: their concept and goals	2+1	1
2	2	A2	A- Mesopotamian civilization B- Human rights in Greek civilization C- Human rights in Roman civilization	2+1	1
3	2	D 1	The position of divine laws on human rights: 1- The Christian religion 2- The Islamic religion	2+1	1
4	2	C2	Western civilization and human rights: 1- Legal sources of human rights in Britain: A- The Magna Carta in 1215 AD B- The Petition of Rights in 1628 AD.	2+1	1
5	2	A3	Daily test for the student on the mentioned subject	2+1	1
6	2	A4	Natural school and social contract theory	2+1	1
7	2	B2	John Locke (1632-1704) AD	2+1	1
8	2	C1	Jean-Jacques Rousseau (1779-1712) m French Declaration of the Rights of Man and of the Citizen on August 26, 1789 AD.	2+1	1
9	2	D2	The concept of administrative and financial corruption.	2+1	1
10	2	A2	Types of corruption in terms of size.	2+1	1
11	2	B 1	Types of corruption in terms of spread.	2+1	1
12	2	C2	Impact of corruption	2+1	1
13	2	A3	Third: The bodies responsible for combating corruption globally	2+1	1
14	2	D3	Discussing research submitted by students	2+1	1
15	2	B2	A comprehensive review of the aforementioned materials to prepare for the exams	2+1	1
16	2	C1	International organization and bodies working on human rights issues A- The General Assembly B- The Economic and Social Council	2+1	1
17	2	D4	The United Nations, human rights, and agencies working on human rights issues	2+1	1
18	2	A2	2- Universal Declaration of Human Rights: Article 1: All human beings are born free and equal in dignity and rights.	2+1	1
19	2	B 1	Article Two: Every human being has the right to enjoy all the rights and freedoms mentioned in this declaration without any discrimination. Article Three: Every individual has the right to life, liberty, and integrity of his personality. Article Four: No person may be enslaved or excluded, and slavery and the slave trade in all its forms are prohibited. Article Five: No person shall be subjected to torture, punishment, or cruel, inhuman or degrading treatment.	2+1	1

			Article Six: Every human being, wherever he may be, has the right to have his legal personality recognized.		
20	2	C2	Article Seven: All people are equal before the law and have the right to equal protection Article Eight: Every person has the right to resort to national courts for redress. Article Nine: No person may be arbitrarily arrested, detained, or exiled Article Ten: Every human being has the right, on full equality with others, to have his case heard before an independent and impartial court	2+1	1
21	2	A3	Article Eleven: Every person accused of a crime is considered innocent until proven guilty Article Twelve: No one shall be subjected to arbitrary interference with his privacy, family, residence, or correspondence. Article Thirteen: Every individual has freedom of movement. Article Fourteen: Every individual has the right to seek refuge in, or attempt to seek refuge in, other countries to escape persecution. Article Fifteen: Every individual has the right to enjoy his nationality. Article Sixteen: 1- When men and women reach the age of marriage, they have the right to marry and establish a family. 2- The marriage contract shall not be concluded except with the complete consent of both parties wishing to marry without coercion. 3- The family is the basic natural unit of society and has the right to enjoy the protection of society and the state.	2+1	1
22	2	A4	Article Seventeen: Every person has the right to own property, alone or jointly with others. No one may be arbitrarily deprived of his property. Article Eighteen: Every person has the right to freedom of thought, conscience and religion. Article Nineteen: Every person has freedom of opinion and expression. Article Twenty: Every person has the right to freedom of participation in peaceful associations and groups. Article Twenty-One: Every individual has the right to participate in the management of public affairs in his country. Every individual has the same right as others to hold public positions in the country. The will of the people is a source of authority. Article Twenty-Two: Every person has the right, as a member of society, to social security.	2+1	1
23	2	B2	Article Twenty-Four: Every person has the right to rest and leisure.	2+1	1

			<p>Article Twenty-Five: Every individual has the right to an adequate standard of living.</p> <p>Article Twenty-Six: Every person has the right to education. Education must aim to develop the personality of children, who have the first right to choose and type of upbringing for their children.</p> <p>Article Twenty-Seven: Every individual has the right to participate freely in the cultural life of the community. Every individual has the right to the protection of moral and material interests.</p> <p>Article Twenty-Eight: Every individual has the right to society in an international social order under which the rights and freedoms stipulated in this declaration are realized.</p> <p>Article Twenty-Nine: 1- Every individual has duties for the growth of society in which the individual is allowed to develop in full freedom.</p> <p>2- The individual is subject in exercising his rights and freedoms to those restrictions determined by law only to ensure recognition and respect for the rights and freedoms of others and to achieve the just requirements of public order, public interest and morality in a democratic society.</p> <p>3- Under no circumstances may these rights be exercised in a manner that contradicts the purposes and principles of the United Nations.</p> <p>Article Thirty: There is no text in this declaration that may be interpreted to authorize a state, group, or individual to carry out an activity or increase an activity aimed at destroying the rights and freedoms contained therein.</p>		
24	2	D3	Daily test for students on the mentioned subjects	2+1	1
25	2	A2	European Convention on Human Rights	2+1	1
26	2	B3	1- Regional human rights conventions and organizations 2- The American Convention on Human Rights	2+1	1
27	2	A4	3-The African Charter on Human and Peoples' Rights. The draft Arab Charter on Human Rights	2+1	1
28	2	C1	Non-governmental organizations and their role in defending human rights 1-Amnesty International.	2+1	1
29	2	D4	2-The International Committee of the Red Cross	2+1	1
30	2	C2	Arab Organization for Human Rights 4- Refugee relief organizations	2+1	1
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
English Language					
2. Course Code:					
3. Semester / Year:					
First					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
1					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Farah Kamil Abid Muslim Email:					
8. Course Objectives					
Course Objectives			After completing the study, the graduate will be able to develop his intellectual, personal and professional abilities and acquire basic language skills (listening, speaking, reading and writing) in order to communicate with English speakers,		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1&2	1	A1	Grammar (part of speech). Vocabulary (what is this?) Everyday English (numbers 1-10)	2+1	1

3&4	1	A2	Grammar (am, are, is, present simple tense, irregular verbs). Vocabulary (countries, cities). Reading (where are they from)	2+1	1
5&6	1	D 1	Grammar (wh-questions, negative question and short answer). Vocabulary (jobs). Everyday English (social expression)	2+1	1
7&8	1	C2	Questions (possessives adjectives, punctuation). Writing (my best friend) Vocabulary (the family).	2+1	1
9&10	1	A3	Questions (the time, a and an). Speaking (at a party) Vocabulary (sports, food, drinks).	2+1	1
11&12	1	A4	Everyday English (prepositions of time, days of the week). Vocabulary and speaking (words go together)	2+1	1
13&14	1	B2	Grammar (object pronouns, this, that). Vocabulary (opposite adjectives). Everyday English (can I) Writing (a postcard from Dublin)	2+1	1
15&16	1	C1	Grammar (there is/are, any). Vocabulary (rooms in a house) Everyday English (directions).	2+1	1
17&18	1	D2	Grammar (years, past simple, irregular verbs). Vocabulary people and jobs) Everyday English (months of the years).	2+1	1
19&20	1	A2	Grammar (questions and negative). Vocabulary (weekend activities) Writing (my last holiday)	2+1	1
21&22	1	B 1	Grammar (can/ can't, requests and offers). Vocabulary (verbs and nouns that go together) Writing (the thing you can do on the internet)	2+1	1
23&24	1	C2	Grammar (want, like, would like). Vocabulary (food) Everyday English (going shopping)	2+1	1
25&26	1	A3	Grammar (present simple and present continuous). Vocabulary (colors) Everyday English (what is the matter)	2+1	1
27&28	1	D3	Grammar (present, past and future). Vocabulary (transport and travel) reading (an amazing journey)	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Machine Parts					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3					
7. Course administrator's name (mention all, if more than one name)					
Name: Faeq Hamid Gburi Email:					
8. Course Objectives					
Course Objectives			Machine parts aim to clarify the role of mechanical parts in the machine system, the relationship that links these parts together, and how to perform some calculations to design these parts and determine all the factors affecting them.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	A1	Review of Strength of Materials	2+1	1

2&3	3	A2	Riveted Joints. Types of Riveted Joints, Design of Riveted Joints, Efficiency of Riveted Joints.	2+1	1
4&5	3	D 1	Welded Joints Types of welding Joints ,Design of welding Joints	2+1	1
6&7	3	C2	Screwed Joints, Design of Bolts for Fastening, Design of Bolts for Power Transition.	2+1	1
8&9	3	A3	Keyed Joints, Types of Key, Design of Sunk Key.	2+1	1
10&11	3	A4	Frictional Clutches, Type of Frictional Clutches, Design of Frictional Clutches.	2+1	1
12&13	3	B2	Types of Springs , Design of Springs	2+1	1
14&15	3	C1	Types of Belts, Design of Belts.	2+1	1
16&17	3	D2	Design of Shafts	2+1	1
18&19	3	A2	Design of Journal Bearings	2+1	1
20	3	B 1	Selection of Ball Bearings	2+1	1
21&22	3	C2	Design of Gears by Lewis Equation	2+1	1
23&24	3	A3	Gears Trains	2+1	1
25&26	3	D3	Design of Simple Gears Box	2+1	1
27&28	3	B2	Worm Gears	2+1	1
29&30	3	C1	Cams	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-Strength of Material by Ferdinal L .Singer 2-Strength of Materials by R.S.Khurmi. 3-Machine Design by R.S. Khurmi, J.K. Gupta 4-Machine Design by Paul H.Black . 5- Schaums Outline Series of Machine Design by Hall , Holowenko , Laughin
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Manufacturing processes(2)	
2. Course Code:	
3. Semester / Year:	
Second	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Hameedah Sahib Hassan Email:	
8. Course Objectives	
Course Objectives	<p>Graduating a cadre capable of working in the fields of manufacturing and production and preparing to contribute to the following work:</p> <p>1- The ability to analyze processes into operating components.</p> <p>2- Preparing the technological path between production units.</p> <p>3- Preparing operating cards and orders for each unit and each machine And calculate the runtime components and load programs for the units.</p> <p>4- Conduct preliminary calculations of operating costs.</p>
9. Teaching and Learning Strategies	
Strategy	

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Geometric tolerances, duals, dual systems, orders of tolerances, dual units, basic deviations,	2+1	1
2	2	A2	Types of tolerances, hole basic system, column basic system, symbols of duals, tolerances for loose dimensions, detailed duals, selection of duals and their economic advantages.	2+1	1
3	2	D 1	Geometric tolerances in shape and position and types of shape and position tolerances.	2+1	1
4	2	C2	Measurement specifiers, design of measurement specifiers, types of measurement specifiers (internal measuring specifiers, external measuring specifiers, adjustable measuring specifiers, solid measuring specifiers, special measuring specifiers).	2+1	1
5	2	A3	Classification of metal fabrication, metal working, introduction to the theory of blade formation and influencing factors, methods of fixing workpieces, including round and non-round, the cutting edges used, and the longitudinal and transverse feed shares.	2+1	1
6	2	A4	Identifying the pens used and how to install them for crafts, shaping lathe pens.	2+1	1
7	2	B2	Identifying the types of turning pen angles, the effect of turning pen angles on the cutting process, types of turning pen metals, cutting conditions, cutting elements, uses of cutting speeds, and the use of tables and speed maps, classification of cutting tools with respect to operating methods and number of cutting edges.	2+1	1
8	2	C1	The cutting edge, the emerging cutting edge and the theory of its formation, the factors that affect it, the factors that lead to reducing its size, cooling and its importance for cutting operations, various cooling liquids.	2+1	1
9	2	D2	How to conduct an operating card for a group of operations, calculate its components, and calculate the cutting time for each operation	2+1	1
10	2	A2	How to take advantage of the sequence card to make a product path through the different units.	2+1	1
11	2	B 1	Factors that affect the choice of cutting speed (1- The effect of the properties of the cutting tool. 2- The effect of the operating elements. 3- The effect of the properties of the metal being worked.	2+1	1
12	2	C2	Automatic turret turning machines, studying the processes that can be operated and	2+1	1

			analyzing the processes on the product, how to prepare operating cards.		
13	2	A3	Types of tools used and their arrangement on the front and rear hexagonal and quadrilateral heads.	2+1	1
14	2	D3	Studying how to program automatic programmed lathes and the factors influencing operating steps.	2+1	1
15	2	B2	Milling, learning about 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.	2+1	1
16	2	C1	Machine accessories, dividing heads, tools for attaching workpieces, mandrels, and bushings.	2+1	1
17	2	D4	Explaining the steps for performing milling operations, choosing the appropriate machine, the initial dimensions of the artifacts, and methods of attaching the artifacts.	2+1	1
18	2	A2	Milling different types of gears (steel, conical, helical, worm gears)	2+1	1
19	2	B 1	How to make a ghanfari clutch, a V-block clutch.	2+1	1
20	2	C2	Operating rates, cutting and feeding speeds, and the basis for their selection for the following various milling operations.	2+1	1
21	2	A3	Skimming: Introduction to the types of planers (trolley, hopper, vertical), operations performed on the planing machine, operating capabilities available with each machine, methods of attaching the work.	2+1	1
22	2	A4	Operating rates, including cutting and feeding speeds, planer attachments such as dividing heads or special devices, angles of planer pens, and types of forces affecting them.	2+1	1
23	2	B2	The planer planer, clarification of (the cutting stroke, the return stroke), methods of connection to the planer machine and operating rates, calculating the cutting time for planing, preparing the planer sequence card.	2+1	1
24	2	D3	Grinding: An introduction to the theory of cutting and the shape of the blade in the grinding process, the grinding stones used (circumferential, face, side, cup, external, internal), their specifications and uses, attachment methods and balances.	2+1	1
25	2	A2	Different grinding machines and the operating capabilities of each type (external and internal cylindrical grinding machines, tool sharpening machines).	2+1	1
26	2	B3	Preparing a comprehensive operating card for all cutting operations.	2+1	1
27	2	A4	Metal forming: theory of forming, foundations of cold and hot forming, types of forming.	2+1	1

28	2	C1	Rolling mill: The basics of rolling and its methods, rolled products, sequence of operations in rolling, machines used, conditions for completing the rolling process. Extrusion: Foundations of metal extrusion and used metals, direct extrusion, reverse extrusion, types of extrusion products.	2+1	1
29	2	D4	Cutting and perforation: The foundations of shearing operations, types of molds and their parts, in each case, dimensions of the raw material and methods of selecting it, calculating shear force. (Drag and deep drag): The foundations of pulling and deep pulling operations, calculating the pulling forces and special ratios in each case, types of pulling and their uses.	2+1	1
30	2	C2	Study of unconventional methods in metal forming: A- Hydrostatic extrusion B-Using electrical discharge. C- Electromagnetic fields. D- Formation with explosives and the advantages of this process.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Introduction to production engineering Written by - Dr. Hassan Hussein Shawqi 2- Production engineering technology and dimensional design Written by - Dr. Abbas Muhammad Sadiq
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Metallurgy					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4					
7. Course administrator's name (mention all, if more than one name)					
Name: Asia Meshal Salim Email:					
8. Course Objectives					
Course Objectives			Preparing technical graduates with information in metallurgy and materials science who are responsible for studying the country's need for development and progress and who are able to meet the needs of the labor market in state institutions and industry sectors.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2	A1	Introduction to mineralogy, crystallization, chimeric crystallization, and the effect of cooling rate on the structure of minerals.	2+1	1
2	2	A2	Installation of metal blocks (solidification of castings) Common defects in castings.	2+1	1
3	2	D 1	Atomic crowding coefficient, crystallographic directions, crystallographic levels, the phenomenon of rooting.	2+1	1
4	2	C2	Crystalline, point, linear lattice defects.	2+1	1
5	2	A3	Flexible forming and plastic forming (sliding, twinning)	2+1	1
6	2	A4	Strain hardening, cold forming, hot forming.	2+1	1
7	2	B2	Recovery, recrystallization, crystal growth.	2+1	1
8	2	C1	Stress and strain curves in bending, stretching, fracture, types of fracture, movement from ductile to brittle fracture.	2+1	1
9	2	D2	Fatigue, fatigue mechanism, factors affecting the fatigue limit, fatigue-resistant materials.	2+1	1
10	2	A2	Creep, creep mechanism, creep-resistant materials.	2+1	1
11	2	B 1	Compound, phase, solid solution, system, equilibrium, alloy formation, mechanical mixture, eutectics.	2+1	1
12	2	C2	Thermal equilibrium diagram for a binary system that is completely dissolved in the liquid and solid states. Thermal equilibrium diagram for a binary system that is completely dissolved in the liquid state and undissolved in the solid state (eutectics).	2+1	1
13	2	A3	Thermal equilibrium diagram for a binary system with complete solvation in the liquid state and limited solvation in the solid state.	2+1	1
14	2	D3	Thermal equilibrium diagram for a binary system that is completely dissolved in the liquid state and forms a chemical compound when frozen.	2+1	1
15	2	B2	Iron, dissolution of carbon in iron, heat equilibrium diagram for the iron/carbon system, the most important reactions included in the diagram.	2+1	1
16	2	C1	Completion of the heat equilibrium diagram for the iron/carbon system.	2+1	1
17	2	D4	Austenite formation, mechanism of converting pearlite to austenite.	2+1	1
18	2	A2	Austenite transformations with constant temperature and transformations by continuous cooling.	2+1	1
19	2	B 1	Thermal treatments (annealing, equalization, standardization)	2+1	1
20	2	C2	Completion of thermal coefficients (standardization and revision), sub-zero thermal coefficients, aging.	2+1	1
21	2	A3	Surface hardening (carburization of all types and the thermal treatments that follow it) Al-Tahwa, Al-Sanida.	2+1	1
22	2	A4	Alloy steel, the effect of alloying elements on the properties of steel.	2+1	1
23	2	B2	Stainless steel, tool steel.	2+1	1

24	2	D3	Cast iron production and its heat treatments.	2+1	1
25	2	A2	Supplementing the production of cast iron and its most important types.	2+1	1
26	2	B3	Definition of corrosion, direct and indirect economic costs of corrosion, manifestations of corrosion, mechanism of corrosion.	2+1	1
27	2	A4	Passivity, Faraday's law general corrosion, galvanic corrosion, cavernous corrosion.	2+1	1
28	2	C1	Soil corrosion, facultative corrosion, intercrystalline corrosion, and stress corrosion.	2+1	1
29	2	D4	Optimal material selection, contour softening, design and operation.	2+1	1
30	2	C2	Methods of corrosion prevention.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-Engineering Metallurgy (part 1) Higgins (Capright 1973 R.A.H) 2- Metallurgy for Engineering – Rollason (Third Eddi 1961) 3- Engineering physical Metallurgy Prof Y. Lnthin
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Management & occupational safety					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Farah Kamil Abid Muslim Email:					
8. Course Objectives					
Course Objectives			Teaching the student the concept of management and its importance in various industries in a way that serves to improve productivity and reduce the percentage of spoilage, how to apply procedures to prevent industrial accidents, and how to control quality.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Management: management and its development, stages and development of management, basic principles of	2+1	1

			management, characteristics of management, levels of management.		
2	2	A2	Management: Administrative functions, industrial management, its functions, industrial engineering, characteristics of industrial management.	2+1	1
3	2	D 1	Arrangement of the industrial unit: - Location and arrangement of the industrial unit - The main factors affecting the selection of industrial project sites. - Arrangement of the industrial unit (initial arrangement of the factory). - Classification of the types of industrial unit arrangements. - Advantages, determinants, and cases in which it is applied (commodity, functional, mixed, and combined arrangement).	2+1	1
4	2	C2	Feasibility study for industrial projects: An idea about the feasibility study for industrial projects. The industrial project, stages of feasibility studies, the importance of feasibility studies.	2+1	1
5	2	A3	Production planning: production planning, the concept of production planning, goals of production planning and control.	2+1	1
6	2	A4	Production planning: types of production, production planning methods, linear programming methods, graphical method, and transportation method.	2+1	1
7	2	B2	Discussing reports submitted by students with a test.	2+1	1
8	2	C1	Study work and standard time: Work study, work study methods, method study, time study, work measurement.	2+1	1
9	2	D2	Maintenance, the importance of maintenance, the concept of the technological system	2+1	1
10	2	A2	Maintenance: Types of maintenance, types of holidays.	2+1	1
11	2	B 1	Training, the concept of training, the importance of training, training methods.	2+1	1
12	2	C2	Costs, classification of costs, wages.	2+1	1
13	2	A3	Methods of calculating wages, incentives, and types of incentives	2+1	1
14	2	D3	purchase management: Purchases, purchasing steps, inventory, types of stored materials and methods of controlling them.	2+1	1
15	2	B2	Industrial safety : Industrial safety, accidents, types of accidents, road accidents, protective equipment and their types.	2+1	1
16	2	C1	Quality control: The meaning of control, the meaning of quality.	2+1	1
17	2	D4	Quality control: Definition of quality, quality specifications, factors controlling quality, development and improvement of quality, design, and quality conformity, international and Iraqi standard specifications.	2+1	1

18	2	A2	Quality control methods and sample inspection plans: Quality control methods, examination and inspection methods, quality control steps, sampling methods, sample inspection schedule.	2+1	1
19	2	B 1	Quality control methods and sample inspection plans: Operating characteristic curve, quality of design, data collection (type and analysis).	2+1	1
20	2	C2	Control charts	2+1	1
21	2	A3	Control charts: Preparing and using a mean chart. Preparing and using a Pareto chart.	2+1	1
22	2	A4	Control charts: Prepare a chart with standard deviation Prepare a defect chart	2+1	1
23	2	B2	Control charts: Scatterplot, how to prepare a scatterplot.	2+1	1
24	2	D3	Control charts: Quality control charts for standard deviation and percentage of defective units. Histogram (preparation and use)	2+1	1
25	2	A2	Types of control charts: Control charts for variables (control chart for arithmetic mean (X-chart)).	2+1	1
26	2	B3	Types of control charts: Control charts for variables (control chart for range R-Chart and control chart for standard deviation δ -chart).	2+1	1
27	2	A4	Types of control charts: Control charts for features (control chart for the percentage of defective units P-chart).	2+1	1
28	2	C1	Types of control charts: Control charts for features (Control chart, number of defects in one unit, C-Chart).	2+1	1
29	2	D4	Types of control charts: Control charts for features (U-chart for the average number of defects in the vocabulary set).	2+1	1
30	2	C2	Discussing reports submitted by students with a test.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1- Industrial Administration - Authority of Technical Institutes 1990
Isser Soussan, Fares Jabar Shalash.
2- Industrial Engineering - Dar Al-Kutub for Printing and Publishing - University of Basra - first edition 2000
Dr.. Adel Abdel Malek Curial

	<p>3- Total Quality Management and ISO Requirements 2000-2009, first edition 2001, Al-Ashqar Press - Baghdad Dr.. Khalil Al-Ani, Dr. Ismail Ibrahim Al-Qazzaz, Dr. Adel Abdel Malek Curial</p> <p>4- Hammdy A. Taha "Operations Research: an introduction" 6th edition (1997), Prentice-Hall.</p> <p>5-Prem Kumar Gupta and D.S. Hira "Operation Research: an introduction" 2nd edition (1989)S. Chand & Company LTD, New Delhi.</p> <p>6-Charles E.Ebeling "An Introduction to Reliability and Maintainability Engineering" (1997), Mc Graw - Hill</p> <p>7-Phillips, D.T.;Ravindran, A.;Solberg, J. "Operation Research: Principles and Pactice" (1976) John Wiley.</p>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Computer Applications(2)					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4					
7. Course administrator's name (mention all, if more than one name)					
Name: Maher Rehaif Khudair Email:					
8. Course Objectives					
Course Objectives			Introducing the student to using the 2D and 3D engineering drawing program (AutoCAD 2D & 3D) with applications in his field of specialization.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Introduction to the AutoCAD program, Screen settings (Snap, Limit, Grid, Pan, Zoom)	2+1	1

2-4	2	A2	Draw menu.	2+1	1
5-6	2	D 1	List of revisions (modify).	2+1	1
7	2	C2	Object Snap menu.	2+1	1
8	2	A3	Layers.	2+1	1
9	2	A4	Dimensions.	2+1	1
10	2	B2	Writing, Hatching	2+1	1
11	2	C1	Store files, import files from other programs, and export them.	2+1	1
12	2	D2	Making blocks and importing parts from other programs, such as dividing an element with equal distances (Divide), distributing elements along a path (Measure).	2+1	1
13&14	2	A2	Computer drawing applications according to the department's specialty.	2+1	1
15	2	B 1	Printing, copying and extracting files on the plotter.	2+1	1
16	2	C3	Principles of drawing in three dimensions.	2+1	1
17-20	2	A3	List of cortical trigrams (Surface).	2+1	1
21-23	2	D3	List of Solids.	2+1	1
24-26	2	B2	Applications on the commands Slice - Revolve - Extrad	2+1	1
27&28	2	B2	Solid Editing drawing revisions	2+1	1
29&30	2	B2	Draw an applied example within the department's specialty.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Crimes of the Baath regime					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2					
7. Course administrator's name (mention all, if more than one name)					
Name: Alaa Mohammed Muhaimid Email:					
8. Course Objectives					
Course Objectives			The course aims to study and teach an era that passed through the Iraqi state, which was known for violating human rights and committing crimes against humanity, and for which it was known for the era of cemeteries and genocides.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1&2	2	A1	The crimes of the Baath regime according to the law of the Iraqi Supreme Criminal Court in 2005 AD	2+1	1
3	2	A2	The concept of crimes and their categories	2+1	1
4	2	D 1	Definition of crime linguistically and terminologically	2+1	1
5&6	2	C2	Crime departments	2+1	1
7	2	A3	The crimes of the Baath regime according to the documentation of the law of the Supreme Iraqi Criminal Court in 2005 AD	2+1	1
8	2	A4	Types of international crimes	2+1	1
9&10	2	B2	Decisions issued by the Supreme Criminal Court	2+1	1
11	2	C1	Psychological and social crimes and their effects, and the most prominent violations of the Baathist regime in Iraq	2+1	1
12	2	D2	Mechanisms of psychological crimes	2+1	1
13	2	A2	Psychological effects of crimes	2+1	1
14	2	B 1	Social crimes	2+1	1
15	2	C2	Militarization of society	2+1	1
16	2	A3	The Baathist regime's position on religion	2+1	1
17	2	D3	Pictures of human rights violations and crimes of power	2+1	1
18	2	B2	Some decisions regarding political and military violations of the Baath regime	2+1	1
19	2	C1	Prison and detention places of the Baath regime	2+1	1
20	2	D4	Environmental crimes of the Baath regime in Iraq	2+1	1
21	2	A2	Military and radioactive contamination and mine explosions	2+1	1
22	2	B 1	Destruction of cities and villages (scorched earth policy)	2+1	1
23	2	C2	Drying the marshes	2+1	1
24	2	A3	Demolishing palm groves, trees and crops	2+1	1
25	2	A4	Mass grave crimes	2+1	1
26&27	2	B2	Incidents of genocide graves committed by the Baathist regime in Iraq	2+1	1
28-30	2	D3	Chronological classification of genocide graves in Iraq for the period 1963 AD - 2003 AD	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Crimes of the Baath regime
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
English Language					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
1					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Hameed Trad Shaker Email:					
8. Course Objectives					
Course Objectives			After completing the study, the graduate will be able to develop his intellectual, personal and professional abilities and acquire basic language skills (listening, speaking, reading and writing) in order to communicate with English speakers,		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1&2	1	A1	Grammar (present, past, future). Pronunciation. Translation. Everyday English (have a good weekend)	2+1	1

3&4	1	A2	Years Grammar (have, have got). Writing (description a person). Vocabulary (parts of speech).	2+1	1
5&6	1	D 1	Grammar (Past tenses). Listening (neighbors), Writing (linking words)	2+1	1
7&8	1	C2	Grammar (quantity) Everyday English (prices and shopping).	2+1	1
9&10	1	A3	Grammar (future intentions) Listening (a song- you've got a friend). Writing (writing a post card)	2+1	1
11&12	1	A4	Everyday English (directions). Vocabulary (talking about cities)	2+1	1
13&14	1	B2	Grammar (present perfect and past simple) Vocabulary (past participles). Reading (celebrity interview from Hi!)	2+1	1
15&16	1	C1	Grammar (have got to, should, and must). Everyday English (at the doctor's). Reading (problem page)	2+1	1
17&18	1	D2	Grammar (time and conditional clauses). Everyday English (in a hotel).	2+1	1
19&20	1	A2	Grammar (verb patterns). Listening (when I was young).	2+1	1
21&22	1	B 1	Pronunciation (Shifting sentence stress). Translation. Vocabulary (Transport and travel)	2+1	1
23&24	1	C2	Grammar (passives). Everyday English (notices) Writing (writing a review of a film or a book)	2+1	1
25&26	1	A3	Grammar (second conditional). Speaking (super volcano). Speaking (giving advice) Writing (adverbs)	2+1	1
27&28	1	D3	Grammar (present perfect continuous). Vocabulary (word formation). Speaking (telling stories).	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Industrial drawing					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3					
7. Course administrator's name (mention all, if more than one name)					
Name: Ahmed Hassan Baaiwi Email:					
8. Course Objectives					
Course Objectives			Acquiring the necessary skill to read technical drawings, know symbols, engineering terminology, and standard specifications, and draw simple and complex assembled mechanical parts that are most frequently encountered in the student's practical life.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	A1	A general review of first grade topics: geometric lines, projections, sections, and	2+1	1

			setting dimensions using the AutoCAD program.		
2&3	3	A2	Methods of fastening using screws, types of screws, types of nuts, with a drawing.	2+1	1
4&5	3	D 1	Fastening using threads, their types, uses, drawing an assembly drawing.	2+1	1
6&7	3	C2	Connection by welding, welding symbols, drawing an assembly plate with welding symbols.	2+1	1
8&9	3	A3	Fastening using rivets, shapes of rivet nails, types of fastening using rivets, drawing an assembly plate.	2+1	1
10	3	A4	Application board for disassembly and assembly of mechanical crane.	2+1	1
11	3	B2	Springs, their types, uses, drawing of a compression spring.	2+1	1
12	3	C1	Drawing an applied panel for segmenting and assembling the exhaust valve.	2+1	1
13	3	D2	Column connections (couplings), types, drawing of an applied plate.	2+1	1
14	3	A2	Clutches, their types and uses, with an applied drawing.	2+1	1
15	3	B 1	Loading chairs, assembly drawing of a friction loading chair.	2+1	1
16	3	C2	Pulleys and belts, their types and uses, with two drawings for assembling parts containing belt wheels of different types.	2+1	1
17&18	3	A3	Types of gears, gears, basic definitions, drawing of the gear with an assembly plate for engaging the gear.	2+1	1
19&20	3	D3	Bevel gears, with a drawing of an assembly plate for the bevel gear engagement.	2+1	1
21&22	3	B2	Introduction to Autodesk Inventor	2+1	1
23	3	D3	2D drawing environment		
24&25	3	A2	Assembly environment		
26&27	3	B3	Dynamic and motion analysis environment		
28	3	A4	Additions to graphics		
29&30	3	A4	A project within the jurisdiction of the relevant department for part of any practical system.		

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Power transmission systems					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ahmed Hashim Yousif Email:					
8. Course Objectives					
Course Objectives			Introducing the student to the systems used to transmit power, along with familiarity with the components of these systems, how to install them, and methods of maintaining them.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Energy, energy sources, mechanical power transmission systems, sources of mechanical movement.	2+1	1
2	2	A2	Internal combustion engines - electric motors - pneumatic motors.	2+1	1

3	2	D 1	Direct and indirect methods of transmitting power from the engine - axle bearings - their types.	2+1	1
4	2	C2	Motion clutch - types of clutches - how they work - maintenance - symptoms and possible malfunctions.	2+1	1
5	2	A3	Gearbox, its types, and how to choose the appropriate one according to the required speed - Symptoms, possible malfunctions, and their maintenance.	2+1	1
6	2	A4	Stops - their types - how they work - malfunctions and possible symptoms - their maintenance - the drive shaft.	2+1	1
7	2	B2	Conveyor belts - their types - advantages of each type of belt - disadvantages, maintenance, calculations - how they work.	2+1	1
8	2	C1	Transmission methods: Advantages of each type - Hydraulic power transmission systems.	2+1	1
9	2	D2	Hydraulic systems - parts of a simple hydraulic circuit - how they work.	2+1	1
10	2	A2	Hydraulic strainers (filters) - their types, how they work, their installation, possible symptoms and malfunctions, their maintenance, and their calculations.	2+1	1
11	2	B 1	Gear hydraulic pumps - their types - how they work - their installation - malfunctions and maintenance - their calculations.	2+1	1
12	2	C2	Hydraulic piston pumps - their types - how they work - their installation - malfunctions and maintenance - their calculations.	2+1	1
13	2	A3	Hydraulic vane pumps - their types - how they work - their installation - malfunctions and maintenance - their calculations.	2+1	1
14	2	D3	Comparison between three types of pumps (gear - piston - vane) in terms of number of cycles - discharge - pressure - how to determine efficiency.	2+1	1
15	2	B2	Types of water pumps (surface - vertical - submersible), their specifications - how they work - their calculations.	2+1	1
16	2	C1	Hydraulic motors - their parts - how they work - possible symptoms and malfunctions - how to maintain them - comparison between hydraulic pumps and hydraulic motors.	2+1	1
17	2	D4	Types of hydraulic cylinders - their components - how they work and possible problems - their maintenance - calculations.	2+1	1
18	2	A2	A practical visit to an industrial facility to learn about the different power transmission systems.	2+1	1
19	2	B 1	Pneumatic power transmission systems - types of air compressors.	2+1	1
20	2	C2	Parts of the compressed air circuit - how it works - possible symptoms and malfunctions - its maintenance.	2+1	1
21	2	A3	Uses of compressed air in factories, machines, and cars - a comparison between hydraulic power transmission systems and pneumatic power transmission systems.	2+1	1

22	2	A4	Types of air blowers - Vacuum generation method - Air dryers - Vacuum generation methods - Vacuum pump - Steam vacuum - Field of use of vacuum.	2+1	1
23	2	B2	Pneumatic hydraulic systems - their components - operation - maintenance.	2+1	1
24	2	D3	Steam systems - steam generation at constant pressure - specific gravity - internal energy.	2+1	1
25	2	A2	Enthalpy-entropy of wet steam - superheated steam - properties of superheated steam - Molière diagram.	2+1	1
26	2	B3	Steam procedures - constant volume procedure - constant pressure - constant heat conservation - adiabatic procedure and isentropic procedure...examples.	2+1	1
27	2	A4	Boilers and their types - Water tube boilers - Flame tube boilers - Comparison between the two types - The scope of use of each type - Its advantages and disadvantages.	2+1	1
28	2	C1	Fuel - types of fuel used - feed water systems - water treatment.	2+1	1
29	2	D4	Heat exchangers - their types - the field of use of each of them.	2+1	1
30	2	C2	A practical visit to an industrial facility to learn about the different power transmission systems.	2+1	1

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Control					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Ameer Abdulkadhum Odeh Email:					
8. Course Objectives					
Course Objectives			Introducing the student to the various control and control systems for production devices and machines, methods of maintaining them, and treating malfunctions that occur in them.		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Basic principles.	2+1	1
2	2	A2	Measurement methods.	2+1	1
3	2	D 1	Types of control systems.	2+1	1

4	2	C2	Hydraulic systems - parts of the hydraulic circuit.	2+1	1
5	2	A3	Hydraulic oil specifications - features of hydraulic oil in the hydraulic circuit.	2+1	1
6	2	A4	An open hydraulic circuit in cases of (raising - lowering - neutral - when the safety valve is working) with illustrative diagrams.	2+1	1
7	2	B2	Closed hydraulic circuits - The difference between a closed and open hydraulic circuit.	2+1	1
8	2	C1	Learn about the symbols used in hydraulic circuits and how to draw and read hydraulic circuits using the symbols.	2+1	1
9	2	D2	Mechanical operation of pressure - discharge - direction control valves.	2+1	1
10	2	A2	The mechanics of the hydraulic fuse & sequence valve.	2+1	1
11	2	B 1	Types of pressure control valves and their symbols. Pressure control valves.	2+1	1
12	2	C2	Types of drain control valves and their symbols. flow control valves.	2+1	1
13	2	A3	Types of directional control valves and their symbols.	2+1	1
14	2	D3	Possible symptoms and malfunctions in the hydraulic circuit - methods of maintaining the hydraulic circuit.	2+1	1
15	2	B2	How to diagnose malfunctions and symptoms in hydraulic circuit parts (pump - cylinders - valves.....etc.)	2+1	1
16	2	C1	Hydraulic accumulators - types of accumulators - their components.	2+1	1
17	2	D4	Functions of hydraulic accumulators - possible malfunctions - maintenance.	2+1	1
18	2	A2	Compressed air system - Control elements in the compressed air system - Types of pneumatic valves and their uses.	2+1	1
19	2	B 1	Mechanical operation of temperature control devices - types of temperature control devices.	2+1	1
20	2	C2	Mechanical operation of pressure control devices - types of pressure control devices.	2+1	1
21	2	A3	Mechanism of operation of humidity control devices - Types of humidity control devices.	2+1	1
22	2	A4	Mechanics of operation of control devices for measuring volumes, masses, and currents - Types of devices for controlling volumes and masses.	2+1	1
23	2	B2	Electrical control system.	2+1	1
24	2	D3	Control elements in the electrical system.	2+1	1
25	2	A2	Relay - limit switch, solenoid valve.	2+1	1
26	2	B3	Contactors.	2+1	1
27	2	A4	Explanation of the control circuit for a three-phase motor - Explanation of the current regulator and voltage regulator circuit.	2+1	1
28	2	C1	Electronic control system.	2+1	1
29	2	D4	Resistance - coil - capacitor - electronic valves - transistor and thyristor.	2+1	1
30	2	C2	A visit to one of the industrial facilities to view the command and control systems.	2+1	1

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Course Description Form

1. Course Name:					
Electrical technology					
2. Course Code:					
3. Semester / Year:					
Second					
4. Description Preparation Date:					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Areej Ghazi Abdulshaheed Email:					
8. Course Objectives					
Course Objectives			Studying the theoretical foundations of electrical technology for various machines and components of electrical appliances and methods of operating and maintaining them		
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A1	Elements of an electrical circuit with electrical units and symbols for current and potential difference, electromotive force-power	2+1	1

2	2	A2	Conductors - semiconductors - insulators - the meaning of resistance - specific resistance - Ohm's law - how to connect resistors in series and parallel and other mixed forms - simple examples - Kirchhoff's theory of current and voltage	2+1	1
3	2	D 1	Semiconductors - pure crystal - grafted crystal (N-type) and (P-type)	2+1	1
4	2	C2	The double junction and how to obtain it, with an explanation of the electron current and the gap current	2+1	1
5	2	A3	The barrier voltage - the separation region - the forward and reverse bias of the diode - giving the properties of the diode in the forward and reverse directions with the definition of the maximum value of the current (If max) and the maximum value of the reverse voltage (piv) - the breakdown voltage - the meaning of the maximum value of power (pmax) - the symbol used for the diode and the circuit Its equivalent – using the diode as a current combiner in real life	2+1	1
6	2	A4	Cicada diode - its composition, technical specifications, and how to use it to regulate constant voltage - with simple examples	2+1	1
7&8	2	B2	Transistor (BJT): its structure and how it works - the effect of temperature on the collector current - clarifying the meaning of (Adc) and (Bdc) and the relationship between them	2+1	1
9	2	C1	Transistor characteristic curves for the common emitter circuit - introducing the student to the different types of connection - how to bias a transistor - how to read transistor data from sheets	2+1	1
10&11	2	D2	Field-effect transistor (FET): its structure, how it works, and its characteristic curve VDS, Id - Mosfet type transistor, its structure and how it works, for the boost and depletion mode, and how to bias them with direct current	2+1	1
12	2	A2	Silicon modules with current control (DIAC) and (SCR)	2+1	1
13	2	B 1	(TRIAC) The structure of each one and how it works - Drawing and clarifying characteristic curves - How to use it in practical life to control current and phase angle	2+1	1
14&15	2	C2	Basic principles of magnetism - magnetic field - lines of magnetic force - magnetic flux - density of flux - magnetic driving force - magnetic circuit and its relationship to electric current - field magnetic electric current and its applications in practical life - mutual induction	2+1	1
16	2	A3	Self-induction - cyclonic currents and ways to reduce them in electrical machines - direct current generators - properties and advantages of using each of them in practical life - power and efficiency calculations	2+1	1

17	2	D3	DC motors - their installation and how they work - their uses in practical life - the effect of the load on the motor - power and efficiency	2+1	1
18	2	B2	Single-phase alternating current - definition - how to obtain it - sine wave, its equation and frequency, maximum value and effective value - shape factor (configuration factor) - directional diagram of current and voltage for a circuit containing only one element (resistance, pure coil, or pure capacitor)	2+1	1
19	2	C1	Series and parallel circuit consisting of three elements (resistance, coil and capacitance) - Study of the effect of frequency on the circuit impedance - Directional diagram of voltage and current for series and parallel circuits - Resonance state for both circuits	2+1	1
20	2	D4	Three-phase alternating current - how to obtain it - vector diagram and phase sequence process - star connection method (Y) - triangle connection method (Δ) - wave current - line current - wave voltage - line voltage for each case of star and triangle connection	2+1	1
21	2	A2	Power calculations in the three-phase system - effective power - apparent power - power factor - ways to improve the power factor in electric power generation plants	2+1	1
22	2	B 1	Single-phase electrical transformer - its definition - its composition and how it works - types of transformers - the law of electromotive force in the transformer - the equivalent circuit transformation ratio for the ideal transformer and the real transformer	2+1	1
23	2	C2	Single-phase induction motors - capacitor motors - split-face motors, how they work and their uses in each	2+1	1
24	2	A3	Three-phase motors - induction motors - their installation - types (squirrel cage - coiled rotor) how they work (rotating magnetic field) methods of starting induction motors	2+1	1
25&26	2	A4	Alternating current generators, their types in terms of installation, slow speed generators and how they work - the use of each of them in practical life - self-feeding methods for alternating current generators - methods for cooling large station generators	2+1	1
27	2	B2	Synchronous motors: their structure and how they work - their use in improving the network power factor	2+1	1
28	2	D3	Methods of transmitting electrical energy - transmission lines (over head) and underground cables - values used for energy transmission efforts in practical life	2+1	1
29	2	A2	Electrical energy distribution bars (Bus Bars) - the process of connecting to the network (Bus Bars Coupler) and the process of disconnecting it - the synchronization	2+1	1

			process and its conditions, power distribution at consumption places (Distribution) The value of the distribution efforts used		
30	2	B3	Types of circuit breakers, breakers and switches used - Relays and how they work to protect the generator and protect the transmission line - Protection from overload - Protection of the ground connection of the stator coils	2+1	1

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