Academic Program Description Form

University Name:.. Al-Furat Al-Awsat Technical University.....
Institute: .. Babylon Technical Institute.....
Scientific Department..... Department of Mechanical Technologies.....
Academic or Professional Program Name: .. Diploma in Mechanical Technology ...
Final Certificate Name.. Technical diploma in mechanics.....
Academic System: ... annual .....
Description Preparation Date: 2024/2/1
File Completion Date: 2024/2/8

Signature:
Head of Department Name:
L.Faez Jawad Kazem

Date:

Signature:
Scientific Associate Name:
A.P Oras Khudhayer Obayes

Date:

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
L.Khansaa Azeez Obayes
Date:
Signature:

Prof. Dr.
Eman Mohammed Abdullah
Dean of
Babylon Technical

Approval of the Dean

1. Program Vision

Program vision The Babylon Technical Institute aspires, through existing educational programs, to create a technical educational system based on the requirements and needs of society and service facilities related to the specialty in a way that serves the required civil development 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. The oath, which is considered one of the basic and important departments in all the formations of Al-Furat Al-Awsat Technical University, carries out a sublime message, as it works to achieve the goals and aspirations of the students by creating an appropriate educational environment and providing all the material and human requirements necessary to achieve this. And work to graduate groups capable of serving society in providing scientific and technical competence through technical education in accordance with internationally approved quality standards.

3. Program Objectives

General statements desk* Cognitive skills: Providing basic knowledge in production principles along with the knowledge necessary to support mathematics, computer, and engineering basics.

* Technical skills: developing basic skills in mechanical sciences, especially plumbing, turning, welding, carpentry, and filing workshops, in addition to other information about the computer.

communication skills :*

Developing the ability to organize information, whether orally, written, or graphically, in matters such as teamwork, leadership, occupational safety, ethics, service, economics, etc.

*Preparation for the profession: Providing a broad appreciation of the problems that arise in professional practice, including ribbing what the program or institution intends to achieve.

4. Program Accreditation

Does the program have program accreditation? And from which agency? NO

5. Other external influences

Summer training for all, in addition to holding awareness seminars for students

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Second mechanic	21	129	16%	All courses are core
College Requirements	18	122	15%	
Department Requirements	18	122	15%	
Summer Training	–	Without units	–	
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
Second mechanic	A. Minerals	Minerals	2	2
Second mechanic	E.L	English language	1	–
Second mechanic	M.P	Manufacturing processes	2	2
Second mechanic	D.I	Drawing industrial	……	3
Second mechanic	I.M	Industrial management	2	…….
Second mechanic	P.	project	……	2
Second mechanic	C.A	computer applications	1	2
Second mechanic	M.T	Machined parts Technology	3	……
Second mechanic	B.P.C	Baath Party Crimes	2	…….
First mechanic	M.P	Manufacturing processes	2	2
First mechanic	M.P	Material properties	2	…….
First mechanic	M.	Mechanical	2	3
First mechanic	F.	Factor	…….	8
First mechanic	M.	Mathematics	2	…….
First mechanic	E.D	Engineering Drawing	……	3
First mechanic	C.A	computer applications	1	2
First mechanic	E.T	Electricity Technology	1	2
First mechanic	R.D	Rights and democracy	2	…….
First mechanic	E.L	English language	1	……

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Lear A1- Identifying machine parts and how to maintain them. A2- Identify metals, their properties, and heat treatments. A3- How to use the computer in terms of drawing shapes and machine parts. A4- Learn about labor management and industrial projects.ning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning O B1 - Production processes for metals B2 - Maintenance of devices and equipment outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning C1- The student must pay attention to respecting time and order in the classroom C2- That the student understands what cognitive excellence and scientific excellence mean C3- The student should listen carefully to the professor's explanation Outcomes Statement 4
Learning Outcomes 5	Learning O- Activate the student's thinking through sudden and quick questions 2- A quick review of the material presented in previous lectures outcomes Statement 5

9. Teaching and Learning Strategies

Teaching and learning strat1- Training the student on the latest devices.

2- Preparing technical staff capable of work and maintenance.

3- The student studies the computer subject (the Internet and its accessories).egos and methods adopted in the implementation of the program in general.

10. Evaluation methods

1- Listen to the student's solution.

2- Answering questions using paper and the blackboard.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
Professor	Industrial management	advanced systems			2	
	Mechanical	nuclear				
Assistant Professor	Industrial Engineering	Industrial Engineering			1	
Lecturer	Production and Materials Engineering	Production and Materials Engineering			3	
	Applied Mechanics	Metallurgical Engineering				
	Mechanics of materials	Ceramic				
Assistant Lecturer	general mechanic	Refractories			5	
	Agricultural machinery and equipment engineering	Agricultural machinery and equipment engineering				

	sciences	sciences				
	Materials Engineering	Materials Engineering				
	Capacity engineering	Electrical capacity				
	Computer Engineering	Software				

Professional Development nuclear
Mentoring new faculty members
The head of the department greeted the appointees and welcomed them, and they noticed that they were heading towards their workplaces in the department, each according to his specialization and academic achievement, in order to carry out the work of others in it in a good manner, in order to continue the scientific and educational progress and its correct condition, including the maid of the department and the institution in general.
Professional development of faculty members

- Teamwork within the group effectively and actively.

-Manage time effectively and set priorities with the ability to work on regular schedules .

-Leadership and the ability to direct and motivate others.

-Independence at work.

12. Acceptance Criterion

Enrollment in the institute takes place through the central admission system in general, and affiliation to the Department of Mechanical Technology is achieved through differentiation between students' grades according to the regulations established by the Ministry of Higher Education and Scientific Research.

13. **The most important sources of information about the program**
State briefly the sources of information about the program. 1- Methodical books 2- Supplies prepared by the teachers 3- Modern sources from the Internet.

14. Program Development Plan
Medium-term future development plans were developed by a special committee for the department.

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
First production	M.P	Manufacturing processes	Basic				√			√				√	
	M.P	Material properties	Basic				√			√				√	
First production	E.M	Engineering Mechanics	Basic				√			√				√	
	M.	Mathematics	Basic				√			√				√	
First production	E.D	Engineering Drawing	Basic				√							√	
	C.A	Computer Applications	Basic				√							√	
First production	F.	Factor	Basic				√			√				√	
	R.D	Rights and Democracy	Basic				√			√				√	
First .P	E.L	English language	Basic				√			√				√	
Second	M.P.T	Machine parts Technology	Basic				√			√				√	

Production															
Second Production	**M.P**	**Manufacturing processes**	**Basic**				√			√				√	
Second Production	**M.**	**Minerals**	**Basic**				√			√				√	
Second Production	**F.**	**Factor**	**Basic**				√			√				√	
Second Production	**I.D**	**Industrial Drawing**	**Basic**				√			√				√	
Second Production		**Industrial Management**	**Basic**				√			√				√	
Second Production	**C.A**	**Computer Applications**	**Basic**				√			√				√	
Second Production	**E.L**	**English language**	**Basic**				√			√				√	

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

Course Description Form

1. Course Name: **Rights and Democracy**
2. Course Code: **R.D**
3. Semester / Year: **First/annual**
4. Description Preparation Date: **8/ 2 / 2024**
5. Available Attendance Forms**:** **Theoretical lectures**
6. Number of Credit Hours (Total) / Number of Units (Total) : **60**
7. Course administrator's name (mention all, if more than one name)
Name: A.L. Mustafa Mohammed Email: mustafa.mohammed.iba4@atu.edu.iq
8. Course Objectives

Course Objectives	**1- Introducing the student to human rights a democracy and how to deal with people within framework of human rights and democracy and teach him respect** **Human rights and openness to all sects of society** **2- Introducing the student and informing him of cultures of other peoples and countries and linking th with the culture of his surroundings to produce the b results……**

9. Teaching and Learning Strategies

Strategy	

	1- Defining the student's role as a human being with rights and duties 2- Understanding the culture of his country and his environment and the ability to develop it 3- Understand the meaning of democracy correctly, away from chaos and chaos in the name of democracy 4- Applying the foundations of correct democracy in various aspects of lif

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-15	Two hour	Teaching stude about hum rights	human rights	Blackboard+ theoretical lectures	Theory exams
15-30	Two hours	How implement democracy	democracy	Blackboard+ theoretical lectures	Theory exams

11. Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures are given to students and on chairs, a there is no prescribed methodological book
Main references (sources)	- Human rights: their concept and goals - Mesopotamian civilization, human rights in Greek civilization - The position of divine laws on human rights
Recommended books and references (scientific journals, reports…)	Theoretical lectures
Electronic References, Websites	Various internet sites

Week	Vocabulary details
1	Human rights, their definition, and goals The roots of human rights and their development in human history: human rights in ancient and medieval times
2	Human rights in ancient civilizations, especially the Mesopotamian civilization
3	Human rights in the Middle Ages: human rights in political doctrines, schools and theories, human rights in companies and their declarations, revolutions and constitutions (English documents, American Revolution, French Revolution, Russian Revolution) Human rights in contemporary and modern history: international recognition of human rights since World War I and the League of Nations
4	Regional recognition of human rights: European Convention on Human Rights 1950 American Convention on Human Rights 1969 African Charter on Human Rights 1981 Arab Charter on Human Rights 1994
5	Non-governmental organizations and human rights (International Committee of the Red Cross, Amnesty International, Human Rights Watch) National human rights organizations

6	Human rights in Iraqi constitutions between theory and reality
7	The relationship between human rights and public freedoms: 1- In the Universal Declaration of Human Rights 1- In regional charters and national constitutions
8	Necessary human rights and collective human rights
9	Economic, social and cultural human rights and civil and political human rights Modern human rights: facts in development, the right to a clean environment, the right to solidarity, the right to religion
10	Guarantees of respect and protection of human rights at the national level, guarantees in the constitution and laws, guarantees in the principle of the rule of law. Guarantees in constitutional oversight, guarantees in freedom of the press and public opinion, the role of non-governmental organizations in respecting and protecting human rights.
11	Guarantees, respect and protection of human rights at the international level: - The role of the United Nations and its specialized agencies in providing guarantees - The role of regional organizations (the Arab League, the European Union, the African Union, the Organization of American States, the ASEAN Organization) - The role of international non-governmental organizations and public opinion in respecting and protecting human rights
12	The general theory of freedoms: the origin of rights and freedoms, the project's position on declared rights and freedoms, the use of the term general freedoms. The functional nature of the concept of public freedoms: philosophical considerations of the functional right, structural considerations of the positive right, economic considerations and public freedoms.
13	The legal rule of the state of law Regulation of public freedoms by public authorities Non-judicial litigation or grievance Judicial appeal, determining the state's responsibility for its legitimate actions
14	The impact of double judiciary on public freedoms - Public freedoms under administrative jurisprudence Equality: The historical development of the concept of equality
15	The modern development of the idea of equality - gender equality - Equality between individuals according to their beliefs and race
16	The concept of freedoms, classification of public freedoms Fundamental freedoms, intellectual freedoms, economic and social freedoms
17	Freedom, security and feeling of reassurance

	Freedom to come and go
18	Intellectual freedoms: freedom of opinion, freedom of belief Freedom of education
19	Freedom of the press Freedom of society
20	Anti-sabotage law Freedom of association
21	Freedoms with economic and social content Freedom of action
22	The right to own property
23	Freedom of trade and industry
24	women freedom
25	Political parties and public freedoms
26	Public freedoms in the world
27	Scientific and technical progress and public freedoms
28	The future of public freedoms
29	Democracy, its definition, types Concepts of democracy Democracy in the Third World
30	Democratic systems in the world

Course Description Form

Course Name: **Electricity Technology**	
Course Code: **E.T**	
Semester / Year**: First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical + practical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **90**	
Course administrator's name (mention all, if more than one name)	
Name: A.L. Abbas Fakery Email: abbas.alrubayie@atu.edu.iq	
Course Objectives	
Course Objectives	**1-Knowing the basic electric energy, its expected generation and distribution** **2-Knowledge of the known global systems for energ transmission and generation** **3- Knowing the electrical influence systems and calculating the losses from them** **4- Performance by studying the lines of control ove transactions** **5- Knowledge of magnetic systems and principles o electric motors**
Teaching and Learning Strategies	

Strategy	1- Building experience in the foundations of electrical power 2- Building experience in operating electric motors 3- Building experience in examining faults in electrical stations a laboratories.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-8	Two Hours	Basics of electricity and systems	Electrical syste and basiCS	White board +D Show + Control Pan	Theoretical, pract ,surprise exams a reports
9-18	Two Hours	Electrical control systems	Electrical control	White board +D Show + Control Pan	Theoretical, pract ,surprise exams a reports
19-24	Two Hours	Troubleshooting	Fault diagnosis	White board +D Show + Control Pan	Theoretical, pract ,surprise exams a reports
25-27	Two Hours	Occupational safety	Methods a principles occupational safet	White board +D Show + Control Pan	Periodic reports maintenance

Course Evaluation :

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

Learning and Teaching Resources

Required textbooks (curricular books, if any)	- Basics of electricity, electrical units and symbols - Potential difference, Ohm's law, electromotive force, direct and alternating current
Main references (sources)	Lectures by the subject teacher, and there is prescribed textbook. Sources are books and Internet sources
Recommended books and references (scientific journals, reports…)	Electrical technology panel reports
Electronic References, Websites	Electronic scientific websites

Week	Vocabulary details
1	Electrical units and symbols, micro wattage, dc current, emf
2	Potential difference, Ohm's law, methods of connecting resistors (series, para compound)
3	Potential difference, Ohm's law, methods of connecting resistors (series, para compound)
4	Methods of obtaining alternating current, types of electric power plants
5	Sine wave, current waveform with time and frequency, definition of the effec value of alternating current and voltage.
6	Knowledge of power factors and operations, applications and examples of the u of alternating current in practical life.
7	Magnetic field, field properties, properties of magnetism, types of magn materials
8	The magnetic effect of electric current. Applications on the use of the property the magnetic force of attraction
9	Single-phase alternating current, three-phase alternating current, pha recognition method
10	Star (Y) conduction method, face current and line current of star, face voltage a line voltage of star
11	Delta (Δ) connection method, face current and line current in the case of de face voltage and line voltage, power, applications and examples of star and de connection.
12	Types of motors, three-phase induction motors, their types, and uses.
13	Installation of impact motors (tri-phase), principle of rotary magnet theo principle of motor operation theory.
14	Methods of starting movement in three-phase induction motors

15	Methods of control and control in changing the speed of three-phase induct motors (changing poles, changing source voltage, changing oscillation, changir
16	Impact motors are one-sided, their types, installation, uses, and reverse cycles.
17	Single-unit capacitor-start impact motors, their installation and uses
18	Unilateral split-face motors, their installation and uses
19	Fuses, their types, melting coefficient
20	Cycle breakers, thermal monitor against overload.
21	Methods used to identify malfunctions: The engine is unable to rotate, the eng is rotating at a speed less than its ideal speed.
22	The engine temperature rises during rotation, the engine rotates noisily.
23	How to treat and repair each of the previous malfunctions.
24	Command and control circuits used to operate engines manually and automatically.
25	Engine maintenance methods, necessary time periods, and types of maintenan
26	Oiling, lubricating, cleaning, axle bearings.
27	Industrial security, occupational safety during the maintenance process.
28	Study of the ohmmeter (AVO) and how to use it to measure electric curre potential difference and resistance.
29	Recognizing the terminology of the color resistance system
30	Connect resistors in series and parallel in an electrical circuit and find equivalent resistance for the measurement

Course Description Form

Course Name: **Engineering Mechanics**	
Course Code: **E.M**	
Semester / Year**: First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical + practical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **150**	
Course administrator's name (mention all, if more than one name)	
Name: A.L. Zahra Hammond Email: inb.zhr2@atu.edu.iq	
Course Objectives :	
Course Objectives	**Introducing the student to the theoretical basics of statics, dynamics, and material resistance, which makes him m capable and skilled in dealing in the field of mechani techniques.**
Teaching and Learning Strategies	
Strategy	**1-Calculate the resultant forces acting on the bodies** **2-There is the center of gravity of different objects and shapes** **3-Calculate the moment of inertia for different shapes** **4- Applies the laws of motion to objects**

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1-6	2n + 3p	Engineering statics	Forces torque, balance	Lectures	Daily exams
7-10	2n + 3p	Friction	Types of friction a preventive methods	Theoretical lectures	Pop quizzes a discussion
11-18	2n + 3p	Moment of inertia Engineering dynamics	Center of gravity moment of inertia	Theoretical lectures	Pop quizzes a discussion
19-25	2n + 3p	Energy and capacity Resistance of engineer materials	Work, energy and capacity Resistance of materi stresses	Discussion w students + exam	Daily exams
26-30	2n + 3p	Shear stresses	Shear and bending diagrams	Theoretical lectures	Daily exams

Course Evaluation
The degree is distributed 1- 20 marks for the first semester for practical. 2- 20 marks for the second semester for practical 3 - 10 marks for student activities 4 - 50 marks final exam

Learning and Teaching Resources	
Required textbooks (curricular books, if any)	**Lectures by the subject teacher, and there is no prescribed textbook. Sources are books and Internet sources**
Main references (sources)	**Electronic scientific websites .**
Recommended books and references (scientific journals, reports…)	**Engineering mechanics magazines for various si and entities .**
Electronic References, Websites	**1-Scientific sources** **2- Websites**

Week No.	Subject Topics
1	1-Static, fundamental concepts , Force , Scalars and , Vectors , Units , Force polygon , Cartesian Compouents .
2	Analysis of Forces
3	Resultant of Concrrent , Coplanar Force system (2-D)
4	Moments
5	Couples , transformation of the Couple and the force
6	Resultant of non –Concurrent , Coplanar force system (3-D) .
7	Equillibrium , free body diagram (F.B.D.)
8	Equillibrium Conditions (2-D)
9	Equillibrium Conditions (3-D)
10	Friction, Dry Friction
11	Center of Gravity, Centriod (length, area), Centriod of Simple area

Week No.	Subject Topics
12	Centroids of Composite areas.
13	Moment of inertia (Simple and Composite areas).
14	2-Dynamics type of motion ,Linear motion with constant speed .
15	Linear motion with Constant acceleration .
16	Newton's Second Law
17	Curvilinear motion
18	Angular motion , Relative Motion .
19	Work , Energy, Power
20	3-Strength of material :Fundamantal concept,Loads , Stress , Strain , Eelasticity , Plasticity, Deformation .

21	Hook's Law , Stress -strain curve, type of stress .
22	Normal stress due to an axial load on 1-Uniformam Cross section area 2- Variable cross section area .
23	Shear Stress
24	Torsional Stress
25	Thermal Stress
26	Beams , types of loads , types of beams .
27	Shear force (S.F.) & bending moment (B.M.) of Simple supported beam under an –axial load .
28	Shear force (S.F.) & bending moment (B.M.) of Simple supported beam under uniform distributed Load .
29	Shear force (S.F.) & bending moment (B.M.) of cantilever beam under an –axial load .
30	Shear force (S.F.) & bending moment (B.M.) of cantilever beam under uniform distributed Load .

Course Description Form

Course Name: **Engineering Drawing**	
Course Code: **E.D**	
Semester / Year**:** **First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical + practical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **90**	
Course administrator's name (mention all, if more than one name)	
Name: A.L. Nawal Abd Allah Email: nawal-omran@atu.edu.iq	
Course Objectives	
Course Objectives	Teaching and training students on methods of entering coordinates in different ways and drawing using AUTOCAD in two-dimensional space.
Teaching and Learning Strategies	
Strategy	1- The skill of entering data using relative, polar, and absolute method 2- Helping him draw accurately with the possibility of choosing drawi paper 3- Learn and understand how to draw using different drawing commands 4- Learn and understand how to draw with different modification commands 5- Learn and understand how to draw using two-dimensional space

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-15	3	The student learned drawing and modificat instructions in AutoCAD	AUTOCAD 2D	Blackboard+ + Computer	Practical exams
16-30	3	Learn how to implem 2D graphics	Two dimensions	Blackboard+ computer	Practical exams

Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures by the subject teacher, and there no prescribed textbook. Sources are books and Internet sources
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	Scientific journals examining the topics drawing and engineering designs
Electronic References, Websites	1-Scientific sources 2- Websites

Week	Vocabulary details
1	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	Preparing for computer drawing Title Block
3	Drawing geometric shapes using the computer
4	Graphic modifications, computer drawing aids
5	
6	Types of lines for engineering drawing, engineering operations, dimensioning
7	
8	
9	Perspective drawing, a perspective drawing containing a circle represented by an ellipse
10	Projection theory, drawing simplified projections
11	
12	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.
13	
14	
15	
16	Draw the three main projections at even angles and note the difference between them
17	
18	Conclusion of the third project from the two projects
19	
20	Inferring perspective from two or three projections
21	
22	Cutting theory, cutting shapes and lines according to the type of material, drawing cut plots
23	
24	Drawing projections cut from one specific projection
25	
26	Partially cropped project drawing
27	
28	Drawing a half-cut projection, drawing winding sections
29	
30	

Course Description Form

Course Name: **Factor**	
Course Code: **F.**	
Semester / Year: **First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms**: practical**	
Number of Credit Hours (Total) / Number of Units (Total) : **240**	
Course administrator's name (mention all, if more than one name)	
Name: A.L. Abbas fakery Email: abbas.alrubayie@atu.edu.iq	
Course Objectives	
Course Objectives	**Discussing the practical side of the Mechanics Department/Product Branch and introducing the student to the most important mechan workshops and learning about their many different types and technological methods used in arranging the lines of each worksh according to the sequence of steps in making the works for each worksh**
Teaching and Learning Strategies	
Strategy	**1-** Introducing the student in general to the practical side of the Mechanical Technologies Department **2-** Introducing the student to the mechanical workshops in his surroundings and knowing their types **3-** Introducing the student to the types of machines present in each workshop accordi

	to the sequence of their importance in producing various artifacts **4-** The student will be able to stand on the machine, manage it successfully, and learn about ways to maintain it **5-** The student is able to know the problems that occur in the production process a how to find logical solutions to them.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	8	Plumbing workshop	Plumbing foundation	Practical	Practical tests in week
3-6	8	Carpentry workshop	Carpentry operations	practical	Practical tests in week
6-9	8	Welding workshop	Ancient and modern weld processes	practical	Practical tests in week
9-12	8	Lathe workshop	Sequential turning operations	practical	Practical tests in week

Course Evaluation:

Continuing education

Learning and Teaching Resources

Required textbooks (curricular books, if any)	Customized curricula for the laboratory unit
Main references (sources)	References and sources for each workshop
Recommended books and references (scientific journals, reports…)	Periodic reports and field visits to laborator and factories
Electronic References, Websites	Various internet sites

Practical vocabulary	
Weekly	**vocabulary details**
First	1- Model carpentry (3 weeks) 1-The basic principles of model carpentry, definition of types of wood and their uses, types of models, their carpentry and their uses in plumbing. 2- Correcting the model, the conditions that must be met in correcting the model, the shrinkage factor, an exercise on the executive drawing of simple models with one separator term and without a box. 3- The equipment used, the hand tools and the mechanical equipment used, the thickening machine, the tray saw, the band saw, the raking machine, the sanding machine, the converter. 4-Practical training for attaching parts according to the operational drawing on the marks.
second	Completing the training, finishing the parts of the model, methods of assembling it, and its final dimensions.
thired	Complex models: explanation of multiple dividing boundaries and internal spaces.

Practical vocabulary	
Weekly	**vocabulary details**
first	2- Metal Plumbing (6 weeks) - Metal casting and its importance, the purpose of using castings in industry, contents of the casting unit, industrial safety precautions in casting, forming a sand mold for a one-piece model in front of the students, sand for molds and cores, their types and sources, properties of additives, mixing processes and controlling quantities, use of a sand mixer, sand treatment. - Forming sand molds using manual methods for a one-piece model to form a sand mold.
second	Sand mold for a one-piece model with identification of castings and risers, melting metal and pouring it into a mold, extracting and cleaning the castings.

third	Forming a sand mold as before, melting the metal, pouring it into a mold, taking out the casting and cleaning it. .
forth	Casting sand molds in a productive manner, training on the use of plumbing plates that contain more than one piece in one mold and with cores, methods of cleaning castings with brushes, files, grinding stones, steel balls, compressed air, rotating machines, reviewing and examining castings, identifying visible defects and their causes, Review the dimensions of the castings, and ensure that they match the required dimensions.
fifth	Casting sand molds for moving and compound models with a core. These exercises are among the exercises that the student will perform to complete their operation in other laboratories
sixth	Metal smelting furnaces, their types, characteristics, uses, rotary, stirrer, and stationary furnaces.
first	-Refrigeration and maintenance (6 weeks) 1- Industrial development and the role of the refrigerator in it. 2- The veneer foot, its types, measurement methods, how to make a veneer that reads the depth gauge, and the calipers. 3-The Shankara process 4- Foundation surfaces, tools used, display materials, impact fork, straight calipers, chisel calipers, tailbone and tailbone, right angles, chisel flowers, regular and sensitive chinks, altimeter, universal protractor and angle measurement, 5- A practical exercise that combines chicane operations. 6- Files and cold process 7-Types of files and their specifications, components and their types, and methods of attaching the crafts and their work.
	1- Uses of files, how to clean files, the process of filing, practice on a hook and a simple file.

second	2- Cutting with a saw 3- The hand saw, the saw weapon, installing the saw weapon, the conditions that must be met in sawing, an exercise in the saw cutting process.

third	1-Gerification process Types of embryos, tooting and maintenance of embryos, types of manual hammer heads, method of installing the hammer head, exercise on the embryo process. 2-The process of drilling and glazing Types of drills, types of primers, types of reamers, how to perform the drilling and grinding process, training on manual and mechanical drilling and grinding operations after performing the shredding operations. 3-Al-Qalawz Types of screws, internal and external dental tables, training on performing different screwing operations.
forth	Various training exercises on the previously mentioned filing work.
fifth	The importance of maintenance for machines and equipment, clarification of periodic and comprehensive maintenance operations, and how to prepare maintenance reports.
sixth	1-Types of gaskets and sealants, their uses, methods of installing and removing them, and reviewing their operation 2-Types of valves, methods of operation, inspection and repair.
first	-Welding (6 weeks) Occupational safety and security precautions: gas welding, the equipment used and how to install and adjust it, other auxiliary tools and gases used and their specifications, welding wires, their types and measurements, other auxiliary materials, welding equipment, types of flames and the method of igniting and adjusting the required flame, artifacts, rinsing and cleaning the edges to be welded.
	Practical exercises:

second	Welding opposite surfaces, perpendicular surfaces, inclined surfaces, circle welding, longitudinal and transverse cutting Welding equipment, practical training on the use of electric arc in welding various surfaces,
third	Equipment used, electrodes and how to install them, practical training.

forth	Welding using CO2 gas and gas cutting operations, equipment used and precautions to be taken Performing exercises on welding artifacts using CO2 gas
fifth	Training in gas-shielded arc welding (Tig, Mig).
sixth	Assembly exercises using various cutting and welding processes.
first	5-Plumbing and blacksmithing (3 weeks) Equipment for cutting and bending billets, rolling machine, grooving machine and manual tools, using and bending the billet manually, regular thruster, list and drawing method, simple discretization, calculating the individual cut and missing actuators.
second	Training on calculating the individual intersecting works, performing an exercise for two intersecting cylinders.
third	Singular cones and conic ellipses.
first	6-Lathing (6 weeks) The lathe, its specifications, uses, accessories, installation methods, operating the lathe, types of lathe pens using each of them.
	Lathing operations: Plane lathe, tool, center work, simple step drill, use of measuring

second	tools.
third	Mapping the external looting in different ways, explaining the laws for each method, and doing an exercise specifically for the external looting.
forth	1- Externally working on the different teeth (the triangle). Doing an exercise that includes the triangle tooth 2- Make the tooth an outer square and make an exercise.

fifth	Cutting speeds, selecting them, and using their tables.
sixth	Implementing training on decentralized turning and using quadrilateral sampling.

Course Description Form

Course Name: **Manufacturing Processes**	
Course Code: **M.P**	
Semester / Year: **First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical + practical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **120**	
Course administrator's name (mention all, if more than one name)	
Name: A.L. Nawal Abd Allah Email: nawal-omran@atu.edu.iq	
Course Objectives	
Course Objectives	**The student understands the processes and how to use measuring devi and tools (such as a perforator, micrometer, and ruler), as well as devi for measuring permeability, humidity, durability, hardness, and adjustme for all metals. The student learns how to use these devices in practical lif**
Teaching and Learning Strategies	
Strategy	1- The skill of using the measurement process, a veneer, and a ruler 2- Use humidity and permeability measuring devices and plumbing devices 3- How to use and understand hardness and durability measuring devices

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-10	2n + 2p	Measuring devices	Comparison devices	Theoretica practical	Snap tests

10-15	2n + 2p	Shankara	The filings	Theoretica practical	Discussion class
16-30	2n + 2p	Forming operations	**Welding and forming**	Theoretica practical	Discussion class

Course Evaluation	
The degree is distributed 1- 20 marks for the first semester for practical. 2- 20 marks for the second semester for practical 3 - 10 marks for student activities 4 - 50 marks final exam	
Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Lectures by the subject teacher, and there no prescribed textbook. Sources are books and Internet sources .
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	Weekly reports submitted by students.
Electronic References, Websites	1-Scientific sources 2- Websites

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Theoretical vocabulary	
the first	Definition of measurement and units of measurement, error and its causes, methods of measuring main dimensions, simple conveyor measuring devices.
the second	Measuring feet (probes), their parts, uses, and types.
the third	Micrometers, their types, uses, parts, and the idea of how a micrometer works.
the fourth	Measuring molds and their uses, types, and how to use them.
Fifth	Measuring angles and side shapes, tools for measuring angles and measuring cups (debar) and their types

week	Vocabulary details
sixth	Method of measuring screw elements, external and internal diameters, measuring step and step diameter, electronic mechanical comparison devices.
Seventh	Optical device, some modern measurement methods (acoustic frequency measuring devices, digital optical).
eighth	Files and their role in industrial development, the chipping process, the tools used and the processes involved in the filing process, the files used and their specifications, the machines and their types and methods of attaching crafts to them, the uses of files, the method of cleaning files.
Ninth	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.
The tenth	Drilling and grinding, types of drills, types of primers, types of primers, how to perform the drilling and grinding process.
eleventh	Models, their types, wood used in their manufacture, and the conditions that must be met in the model.
twelfth	Tools and devices used in making the model, box molds, and how to design a simple model.
Thirteenth	Plumbing, historical overview, main methods of plumbing (cast casting, sand casting, metal mold casting, other methods of plumbing) Advantages of the plumbing process.
fourteenth	Plumbing sand, plumbing sand specifications, components, plumbing sand, devices used and additives to plumbing sand.
Fifteenth	Dumps and tools used in preparing sand molds, the process of molding a simple and final model, the parasitic molds and the model molds used.
sixteen	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.

seventeenth	Casting with metal molds, its types, centrifugal casting, and its types.
eighteen	Lost wax plumbing, continuous plumbing, shell plumbing.
week	**Vocabulary details**
nineteenth	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.
The twentieth	Casting of castings, its equipment and foundations, cleaning of castings, casting defects, inspection of castings.
21st	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.
twenty tow	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.
twenty third	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.
twenty fourth	Arc welding, welding current, direct and reverse polarity method, types of electrodes, packaging of metal electrodes and their types.
25th	Electrode movement, methods of isolating electrodes and the welding area, electric arc welding using protective gases (carbon dioxide welding, acorn tig welding, brazing welding)
twenty-sixth	Atomic hydrogen arc welding, arc welding, fusion welding.
27th	Temperature welding, caustic welding (mortar welding, plumbing welding) and some modern types of welding (laser welding, electron beam welding).
Twenty-	Welding defects, welding tests.

eighth	

Twenty-ninth	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.
thirty	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).

Course Description Form

Course Name: **Mathematics**	
Course Code: **M.**	
Semester / Year**: First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **60**	
Course administrator's name (mention all, if more than one name)	
Name: L. Najlaa Shaker Aziz Email: najlaa.shemery@atu.edu.iq	
Course Objectives	
Course Objectives	**How to use mathematical functions and their scope of application, addition to how to analyze, conclude, tabulate and organize data i frequency tables and how to display them in graphical charts, in addit to studying probability to reach the best decision.**
Teaching and Learning Strategies	
Strategy	1- The skill of using mathematical functions in applied aspects 2- The skill of organizing and tabulating data into tables, analyzing it, and putting it into graphs 3- Using probability to reach the optimal solution

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-9	2 hour	Learn the laws differentiation	Determinants and differentiatio	the blackboard	Homework surprise exams
10-15	2 hour	Mathematical functions a ways to solve them	Indefinite integration	the blackboard	Homework surprise exams
16-30	2 hour	Laws of definite integration	Vectors statistics a probability	the blackboard	Homework surprise exams

Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

Learning and Teaching Resources

Required textbooks (curricular books, if any)	Subject teacher's lectures are printed Mathematics- Dr. Qasim's assistant book an internet sources .
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	Providing various examples and questions students in the form of reports
Electronic References, Websites	1-Scientific sources 2- Websites

Weekly	**Practical vocabulary**
the first and the second	Determinants and their properties, solving simultaneous equations using the determinant method (Cramer).
Third, fourth and fifth	, differentiation, algebra of derivatives, multiple functions
Sixth, seventh and eighth	Trigonometric, logarithmic and exponential functions and their derivatives and implicit functions, the chain rule.
The ninth, tenth, and eleventh	drawing of functions, drawing of the trigonometric function, and maximum and minimum limits.
Twelfth and thirteenth	: Physical differential applications, velocity and acceleration, and geometric differential applications.
Fourteenth and fifteenth:	Integration, laws, and its relationship to differentiation, definite and indefinite integration.
Sixth, seventh, eighth, and nineteenth	: Implicit integration, geometric applications of integration (areas and volumes) and physics.

Weekly	vocabulary details
Twenty and twenty-first	, general methods of integration, substitution and partial integration, and the use of exponential and logarithmic partial fractions.
The third, fourth, fifth, and twenty-sixth,	discrete, homogeneous, and linear differential equations with their various applications.
Twenty-seventh and twenty-eighth:	Vectors (direct and quantitative multiplication and calculating angles between vectors.
Twenty-nine and thirty	Statistics (principles) and probability theory

Course Description Form

Course Name: **Computer Applications**	
Course Code: **C.A**	
Semester / Year**:** **First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical + practical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **90**	
Course administrator's name (mention all, if more than one name)	
Name: P. Rakia Jawed Email: raqeyah.najy@atu.edu.iq	
Course Objectives	
Course Objectives	**The student understands what is meant by a computer, the types computers and their development over generations. He also learns ab the types of data and how to enter them into the computer system throu operating systems.**
Teaching and Learning Strategies	
Strategy	1-Learning about the operating system 2-Learn how to create a folder 3- Identify the CONTROL PANEL icon 4- Data entry skills using relative and polar methods 5-Learn drawing and editing commands
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-8	1n + 2p	Computer se, software	Calculator generations and c entry methods	the blackbord	Surprise practical exam
9-13	1n + 2p	Computer security...electronic hacking	The most common secu problems	White board+DATA	Surprise practical exam
14-16	1n + 2p	Windows 7 applicati folders, files, icons	Windows 7 operating system	White board+DATA SHOW	Surprise practical exam
16-30	1n + 2p	PowerPoint applicati menus, icons	Microsoft Word operating sys + PowerPoint operating systen	White board+DATA SHOW	Surprise practical exam

Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

Learning and Teaching Resources

Required textbooks (curricular books, if any)	: Computer Basics and its Office Applications (Part One a Two) - Prof. Dr. Ghassan Hamid Abdel Majeed and others Ministry of Higher Education and Scientific Research – Ir .
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	Preparing reports on the representation of geomet shapes .
Electronic References, Websites	1-Scientific sources 2- Websites

Vocabulary details	week
Evolution of computer generations	First
II computer components, physical parts, software	Second
Types of computers, by purpose, by size and performance, by data type, by operating systems	Third
preparation systems, computer features	Fifth
Ethics of the electronic world, forms of excesses	Fifth
Computer security, computer licenses, computer privacy	Six
Types of licenses, intellectual property	Seven
Electronic penetration, types of penetration, sources of penetration	Eight
The most widespread security problems	Nine
Computer viruses, damage caused by the virus	Ten
Characteristics of viruses, components of the virus, types of virus	Eleven
Necessary steps to protect against hacks	Twelve
Computer damage to health	thirteenth
Applications	Fourteenth
Applications	Fifteenth
،Definition of the operating system, OS functions	Sixteenth
Operating system objectives, classification of operating systems	Seventeenth
Examples of some operating systems	Eighteenth

Windows 7 operating system, installation requirements	Nineteenth
Features of Windows 7, desktop components	Twenty
Start menu, taskbar, notification area	Twenty-First
Folders, files, icons	Twenty-second
Window operations, desktop wallpapers	Twenty-third
Control panel, auxiliary instructions	Twenty-fourth
Some common situations and settings in the computer	Twenty-fifth
Microsoft Word operating system	Twenty-sixth
Microsoft Word interface, menus	Twenty-seventh
Rosters	Twenty-eighth
PowerPoint system	Twenty-ninth
PowerPoint lists	Thirtieth

Course Description Form

Course Name: **Material Properties**	
Course Code: **M.P**	
Semester / Year: **First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **60**	
Course administrator's name (mention all, if more than one name)	
Name: L. Mohammed Ali Jabir Email: mohammed.dakhil@atu.edu.iq	
Course Objectives	
Course Objectives	**Teaching and training students to recognize physical and mechan properties, how to conduct tests using Brunel and impact tests, stresses metals, and the use of chemical paint for metals.**
Teaching and Learning Strategies	
Strategy	1- Identify the physical properties of metals 2- Identify the mechanical properties of metals 3-How to use chemical paint for metals 4-How to conduct tests for metals .

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1-10	2hours	The most important phys and mechanical propertie metals	Properties of metals	Blackboard DATA SHAW	Weekly surprise tests
10-15	2hours	Metal smelting furnaces	Methods of manufactur metals and alloys	Blackboard DATA SHAW	Weekly surprise test
16-30	2hours	Iron and its alloys	Properties of steel	Blackboard DATA SHAW	Weekly surprise test

Course Evaluation
The degree is distributed 1- 20 marks for the first semester for practical. 2- 20 marks for the second semester for practical 3 - 10 marks for student activities 4 - 50 marks final exam

Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Subject teacher lectures
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	Weekly reports submitted by students
Electronic References, Websites	1-Scientific sources 2- Websites

Week No.	**Subject Topics**

1	Definition of engineering materials.
2	Atom, element, types of bonds in engineering materials.
3	Crystalline and amorphous materials.
4	Crystal forms: H.C.P, F.C.C, and B.C.C.
5	Mechanical properties of materials: Stress, strain, stress-strain curve, ductility, and failure.
6	Hardness, hardness test.
7	Complement.
8	Toughness and toughness test
9	Thermal properties of materials: Thermal expansion and thermal conductivity.
10	Electrical properties of materials: Ionic materials, insulating materials, metallic materials, and factors affecting conductivity.
11	Magnetic properties of materials: Ferromagnetic materials, paramagnetic materials, diamagnetic materials, magnetic retardation, and factors affecting magnetism.

12	Chemical properties of materials: Corrosion, electrochemical series, and oxidation.
13	Iron, its most important ores, extraction, blast furnace, and transformers.
14	Carbon steel, its most important types, properties, and uses.
15	Alloy steel, its most important types, properties, and uses.
16	Cast iron, its types, properties, and uses.
17	Complement.
18	Copper, its alloys, properties, and uses.
19	Aluminum, its alloys, properties, and uses.
20	Nickel, its alloys, properties, and uses.
21	Tin, its alloys, properties, and uses.

	Zinc, its alloys, properties, and uses. Manganese, its alloys, properties, and uses.
22	Other nonferrous alloys (white metals, bearing alloys)
23	Powder metallurgy: Methods of obtaining metal powders, mechanical methods, physical and chemical methods, natural, mechanical and chemical properties of powders.
24	Powder pressing and sintering process.
25	Ceramic materials.
26	Glass, its types, manufacture, and uses.
27	Concrete, its industrial uses.
28	Polymers, polymer molecules, and types of polymers.
29	Properties and uses of plastics.
30	Plastics Complement.

Course Description Form

Course Name: **English Language**	
Course Code: **E.L**	
Semester / Year: **First/annual**	
Description Preparation Date: **8/2/2024**	
Available Attendance Forms: **Theoretical lectures**	
Number of Credit Hours (Total) / Number of Units (Total) : **30**	
Course administrator's name (mention all, if more than one name)	
Name: A.L Asmaa Adnan Email: asmaa.najm@atu.edu.iq	
Course Objectives	
Course Objective	**Teaching and training the student to recognize the basics of English language :** **1 – Learn about composition writing skills .** **2– Mastering the skill of conversation .**
Teaching and Learning Strategies	
Strategy	1-Recognize welcome phrases 2- Identify the conversation 3-How to use verb tenses 4- How to differentiate between adjectives, nouns and verbs .

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-10	One hour	Mastery of the Engl language	Welcome a introduction in Englis	Theoretical lectures	Test at the end of ea lecture

				listening	
10-15	One hour	Mastery of the Engl language	Pronouns and prepositions	Theoretical lectures listening	Test at the end of ea lecture
16-30	One hour	Countries, capitals a nationalities	Countries, capitals and nationalities	Theoretical lectures listening	Test at the end of ea lecture

Course Evaluation	
The degree is distributed 1- 20 marks for the first semester for practical. 2- 20 marks for the second semester for practical 3 - 10 marks for student activities 4 - 50 marks final exam .	
Learning and Teaching Resources	
Required textbooks (curricular books, if any)	**Subject teacher lectures + Head way book**
Main references (sources)	**Electronic scientific websites**
Recommended books and references (scientific journals, reports…)	**English-language magazines that effective support the curriculum .**
Electronic References, Websites	**1-Scientific sources** **2- Websites**

WEEK	CONTENTS
1	Hello
2	Your World

3	Personal Information
4	Family and Friends
5	It's my life
6	Every day
7	Places I Like
8	Where I live
9	Happy Birthday
10	We Had a Good Time
11	We Can Do It
12	Thank You Very Much
13	Here and Now
14	It's Time To Go
15	Grammar Reference

(**Reference)** :

1- New Headway Book
2- Beginner Students Book

Course Description Form

13.	Course Name: **Baath Party Crimes**
14.	Course Code: **B.P.C**
15.	Semester / Year: **Second/annual**
16.	Description Preparation Date **8/2/2024**
17.Available Attendance Forms: **Theoretical lectures**	
18.Number of Credit Hours (Total) / Number of Units (Total) : **60**	
19.	Course administrator's name (mention all, if more than one name)
Name: A.L Mustafa Mohammed Email: Mustafa.Mohammed.iba4@atu.idu.iq	
20.	Course Objectives

Course Objectives	**a. Developing the student's organized logical thought.** **B. Highlighting the most important reasons for the fall of the Baath Pa regime and the heinous crimes it committed against the Iraqi people.** **C. Developing ideal attitudes and values and instilling the spirit of humanity, tolerance and patriotism in the student.**

21.	Teaching and Learning Strategies
Strategy	- Theoretical lectures - Discussions for students regarding the subject

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1-10	1 hour	Being able to know the general concept crimes linguisticall and terminologicall	The term cri language and conce	Theoretical lectures + listeni	Test at the end each lecture + stud discuss Ion
10-15	1 hour	Identify the differ types of crimes a their psychologi and social effects	Psychological crim social crimes	Theoretical lectures + listeni	Student discussion Test at the end each lecture
16-30	1 hour	The most import unjust decisi against the In people	Violations of In laws and their m prominent un forms	Theoretical lectures + listeni	Test at the end each lecture

23.

Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

24.

25. Learning and Teaching Resources

Required textbooks (curricular books, if any)	A methodological book (Crimes of the Baath Regime Iraq) + lectures by the subject teacher
Main references (sources)	Reliable sources approved by the Ministry of Hig Education and Scientific Research
Recommended books and references (scientific journals, reports…)	Diverse cultural sources effectively support curriculum
Electronic References, Websites	1-Scientific sources 2- Websites

Week	Curriculum vocabulary
1	The concept of crimes linguistically and terminologically Crime departments
2	Types of international crimes

3	Decisions issued by the Supreme Criminal Court
4	Psychological and social crimes and their effects, and the most prominent
5	violations of the Baathist regime in Iraq
6	Psychological crimes, mechanism of psychological crimes
7	The mechanism of pressure and psychological punishment / the mechanism of scientific impoverishment / the effects of psychological crimes
8	Social crimes, first section
9	Social crimes, section two
10	Violations of Iraqi laws and their forms, Section One
11	Violations of Iraqi laws and their forms, Section Two
12	Some decisions regarding political and military violations of the Baath regime
13	Prison and detention places of the Baath regime
14	Environmental crimes of the Baath regime
15	Environmental crimes in Basra
16	Contamination with radioactive materials / Halabja
17	Destruction of cities and villages
18	The battle of the Jassim River and the burning of oil wells
19	Drying the marshes
20	Demolishing palm groves, trees and crops
21	Introduction to mass grave crimes
22	Incidents of genocide graves committed by the Baathist regime/events of 1963
23	Introduction to the events spanning the years 2003-1979 and their relationship to mass graves.
24	The events of the Iran-Iraq War 1980-1988 AD and their relationship to mass graves
25	The events of 1988-1987 and their relationship to mass graves
26	The events of the Shaabani uprising in 1991 AD and their relationship to mass graves
27	Genocide graves related to the Iran-Iraq War for the period 1980-1988 AD:
28	Graves of the genocide of the Barzanian Kurds in 1983
29	Genocide graves of the 1991 Shaabaniya uprising, first section
30	Genocide Graves of the 1991 Shaabaniya Uprising, Section Two

Course Description Form

1. Course Name**: Project**
2. Course Code: **P.**
3. Semester / Year: **Second/annual**
4. Description Preparation Date: **8/2/2024**
5. Available Attendance Forms: **Theoretical lectures and discussions with the project supervisor + field visits to the site for implementing and completing the project work** .
6. Number of Credit Hours (Total) / Number of Units (Total) : **30**
7. Course administrator's name (mention all, if more than one name)
Name: A.P. Zuher Hassan Abdullah Email: inb.zuher74@edu.atu.iq Name: A.T. Nawal Abd Allah omran EMAIL: nawal_omran@atu.edu.iq Name: L. Najlaa Shaker Aziz Email: najlaa.shemery@atu.edu.iq

Name A.T Zehra hmoad
Email: inb.zhr2@atu.edu.iq

Name: A.T Zianab Abd Al Abbas
Email: zainabalnamey68@gmail.com

8. Course Objectives

Course Objectives	**- The student becomes able to create and create various types and shapes of designs and manufacture and assemble models in an accurat and organized scientific manner.** **- Expanding and developing the student's capacity for imaginati imagination, creativity, and implementation.**

9. Teaching and Learning Strategies

Strategy	The organization's workshops and laboratories and conducting practi experiments and various field practices in order to reach and achieve t goal.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	4 hours	Search for sour that are importan the project Identify the differ	topic. Introduction the project + importance of project	Collect vari information about project topic	Continuous discuss with students supervisor follow-up
5-14	4 hours	Research the top of the theoreti part of the projec	Writing the theoreti part of the project	Directions of project supervisor	Continuous discuss with students supervisor follow-up
15-20	4 hours	Research the top	Writing the pract		Continuous discuss

20-30	4 hours	of the practical p of the project Collect informat for the purpose discussing proj results	part of the project V Discussing proj results sm	Preparing all necessary materials a tools complete practical part the project Researching most import results extracted fr the proj under supervision the supervis teacher	with students supervisor follow-up Continuous discuss with students supervisor follow-up

11. Course Evaluation

The degree is distributed

1- 30 marks for the first semester for practical.

2- 30 marks for the second semester for practical

3 - 10 marks for student activities

4 - 30 marks final exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Scientific sources directly related to the project topic selected and directed by the supervisor and proj students
Main references (sources)	Books and scientific sources directly related to the proj topic
Recommended books and references (scientific journals, reports…)	Scientific journals that address the practical and theoret aspects of the project
Electronic References, Websites	Various scientific Internet sites that are directly related the essence of the project topic

Practical vocabulary

first	Discussing the projects that are being tested and determining the method and plan of work.
second	Defining and distributing responsibilities and setting a timetable for project implementation.
third	Preparing drawings and operating cards for the various mechanical laboratories related to the project's parts.
Fourth-Fourteenth:	Implementing the project in the laboratory units and preparing reports on the stages that have been reached, along with weekly follow-up of the work progress of production rates and operating obstacles.
Fifteenth:	Discussion of students by a committee and evaluation of implementation plans for the best (this is considered an evaluation for the end of the first semester).
Sixteenth - Twenty-seventh:	Resuming the implementation of the project paragraphs and completing the practical aspect
Twenty-eighth:	Discussing the details of the project and directing students to prepare the report in its final form (it is considered an evaluation of the second semester).
Twenty-nine:	Completing the project, both its theoretical and practical aspects, and preparing for the final discussion
Thirty	final discussion of the project

Course Description Form

1. Course Name**: Industrial Drawing**
2. Course Code: **I.D**
3. Semester / Year: **Second/annual**
4. Description Preparation Date: **8/2/2024**
5. Available Attendance Forms: **Theoretical lectures + applied training/computer training**
6. Number of Credit Hours (Total) / Number of Units (Total) **: 90**
7. Course administrator's name (mention all, if more than one name)
Name: A.T. Zainab Abd Al Abbas Email: zainabalnamey68@gmail.com

8. Course Objectives	
Course Objectives	**Teaching the student to draw mechanical parts** **Teaching students how to assemble mechanical parts** **Teaching the student the rules and dimensions needed to draw a mechanical part** **Teaching the student to cut assembled parts and how to split them** **Teaching the student to project the combined figure** **Teaching the student to draw three-part mechanical parts assembled** **Teaching the student to read the mechanical part and sort it into desig or blocks.**

9. Teaching and Learning Strategies	
Strategy	-Theoretical lectures - 2- Practical applications - 3- Use DATA-SHOW - 4- Use AUTO CAD program.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	3hours	Review informati	Drop and cut.	Blackboard +	Practical exercise
3-13	3hours	Mechanical p drawing and desig	Drawing of mechani parts.	DATA SHOW Blackboard	Practical exercises
14-26	3hours	Drawing mechanical assemblies.	Assembling mechani parts.	+ DATA SHO	Semester exam
27-30	3hours	Complex group exercises.	Complex group exercises.		Surprise exams

11.

11.Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Drawing and design books Educational bag
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	-Scientific sources 2- Websites
Electronic References, Websites	Continuing education courses

The first week	A general review of first grade topics: geometric lines, projections, and sections. Setting dimensions using AutoCAD
The second and third week	Methods of fastening using screws, types of screws, types of nuts, wit drawing
Week four and five	Connecting by means of threads, their types, uses, drawing a collage painting
Week six and seven	Connecting by welding, welding symbols, drawing an assembly plate with welc symbols
eighth and ninth week	Fastening by rivet, shapes of rivet nails, types of fastening by riv drawing
tenth week	Application plate for segmentation and assembly of mechanical crane

- Week eleven	Springs, their types, uses, drawing of a compression spring. Springs, their types, uses, drawing of a compression spring
The twelfth week	Drawing of an application plate for segmentation and assembly of an exhaust valve Column connections (couplings), their types, application drawing.
thirteenth week	
The fourteenth and fifteenth weeks	Couplings and clutches.
Sixteenth week	Pulleys and belts, their types and uses, with two drawings to assemble parts containing On belt wheels of various types
Week seven and eighteen	Types of gears, gears, basic definitions, drawing of gears with Assembly plate for engaging the gear
Week nineteen and twenty	Bevel gears, basic definitions with assembly plate drawing for gearing Bevel gear.

15- Week 23-22-21 16- Week 25-24	Introduction to Autodesk Inventor And the two-dimensional drawing environment. Autodesk Inventor program And the assembly environment

Course description Form

1. Course Name: **Management & Accupational Safety (industrial management a quality control)**
2. Course Code: **M&A.S**
3. Semester / Year**: Second/annual**
4. Description Preparation Date: **8/2/2024**
5. Available Attendance Forms: **Theoretical lectures**
6. Number of Credit Hours (Total) / Number of Units (Total) : **60**
7. Course administrator's name (mention all, if more than one name)
Name: A.P. Zuher Hassan Abdullah Email: inb.zuher74@edu.atu.iq
8. Course Objectives

Course Objectives	**Teaching and training the student to recognize the control charts, international specifications, and industrial safety found in laboratories, and to manage those laboratories, diagrams, and safety precautions.** **Teaching the student to project the combined figure** **Teaching the student to draw three-part mechanical parts assembled**

9. Teaching and Learning Strategies

Strategy	-1 Theoretical lectures - 2- Use the blackboard

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-15	2 hours	Everything rela to management.	Management administrative operations.	Blackboard discussion reports	Theoretical and surpı exams
16-30	2 hours	Everything rela to quality control.	Quality control charts	Blackboard reports	Theoretical and surpı exams

11.

11.Course Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12.

13. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Industrial Management Book - Acer Soussan
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	-Scientific reports 1-Scientific sources 2- Websites
Electronic References, Websites	Periodic visits to laboratories and factories continuous education

Theoretical vocabulary	
Week	**Vocabulary details**
First	Management: Management and its development, stages development of management, basic principles of management, characteristics of management, levels of management.
Second	Management: Administrative functions, industrial management, functions, industrial engineering, characteristics of industrial management
Third	Layout of industrial facility: - Location and layout of industrial facility - Effect main factors to select of industrial project sites - Layout of industrial facility (initial layout of the factory) - Classification layout types of industrial facility - Advantages, limitations and cases of application (product layout, Process Layout, fixed layout, hybrid layout)(
Fourth	Feasibility study for industrial projects: - Idea for feasibility study of industrial projects Industrial project - - Stages of feasibility studies - Importance of feasibility studies
Fifth	Production planning: Production planning, concept of production planning, objectives of production planning and control
Sixth	Production planning: Types of production, production planning methods, linear programming methods, graphical method, and transportation method
Seventh	Discussion reports submit by students with a test
Eighth	Work study and standard time: Work study, work study methods, method study, time study, work measure
Ninth	Maintenance: Maintenance, importance of maintenance, concept of the technological system
Tenth	Maintenance: Types of maintenance, types of malfunctions
Eleventh	Training:

	Training, concept of training, importance of training, training methods
Twelfth	Industrial costs and wages: Costs, classification of costs, wages
Thirteenth	Industrial costs and wages: Calculating methods of wages, incentives, types of incentives
Fourteenth	Purchase management: Purchases, purchasing steps, inventory, types of stored materials and controlled methods
Fifteenth	Industrial safety: Industrial safety, accidents, types of accidents, accident prevention methods, protective equipment and their types
Sixteen	Quality control: Meaning of control, meaning of quality
Seventeenth	Quality control: Definition of quality, quality specifications, Control factors of quality, development and improvement of quality, quality of design, quality of conformity, international and Iraqi standard specifications.
Eighteenth	Quality control methods and sample inspection plans: Quality control methods, test and inspection methods, quality control steps, sampling methods, sample test schedule
Nineteenth	Quality control methods and sample inspection plans: Operating characteristic curve, design quality, data collection (type and analysis)
Twentieth	Control charts
Twentieth-first	Control charts: Prepare and use a mean chart Prepare and use a Pareto chart
Twentieth-second	Control charts: Prepare a standard deviation chart Prepare a defect chart
Twentieth-third	Control charts: Scatter plot, prepare a scatter plot
Twentieth-fourth	Control charts: Quality control charts for standard deviation and percentage of defective units, Histogram (prepare and use)
Twentieth-fifth	Types of control charts: Control charts for variables (control chart for arithmetic mean (X-chart)
Twentieth-sixth	Types of control charts: Control charts for variables (control chart for range R-Chart and control chart for standard deviation δ-chart)

Twentieth-seventh	Types of control charts: Control charts for Attributes (Control chart for the percentage of defective units P-chart)
Twentieth-eighth	Types of control charts: Control charts for attributes (Control chart to number defects in one item, C-Chart)
Twentieth-ninth	Types of control charts: Control charts for attributes (Control chart for average number defects in the set of items U-chart)
Thirty	Discussion reports submit by students with a test

Course Description Form

1. Course Name: **Metal Material**
2. Course Code**:** **M.M**
3. Semester / Year: **Second/annual**
4. Description Preparation Date : **8/2/2024**

5. Available Attendance Forms: **Theoretical + practical lectures**

6. Number of Credit Hours (Total) / Number of Units (Total) : **120**

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

Name: A.T. Malik Abd Alhusyn
Email: malik.alhusayn.iba@atu.edu.iq

8. Course Objectives

Course Objectives	**Teaching and training students to learn about metallurgy, the composition of m blocks, common defects in castings, learn about plastic and elastic formati learn about stress curves, heat balance diagrams, and thermal coefficients, a learn about corrosion and its economic costs.**

9. Teaching and Learning Strategies

Strategy	1- Theoretical lectures + practical lectures **2**- Use the blackboard

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-10	4 hours	Representing formation the graphically	The theory of pla and elastic formatio	Blackboard theoretical and	Theoretical and surprise exa
11-15	4 hours	Use of metal property test devices.	Mechanical properties metals	Discuss reports	Theoretical and surprise exa
16-20	4 hours	Use of ovens.	Thermal transactions	Discuss reports	Practical exams
21-30	4 hours	Represent diagrams graphica and calculate critical points	Heat balance diagrams	Draw on board	Practical exams

11. Corse Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Curriculum book
Main references (sources)	Electronic scientific websites
Recommended books and references (scientific journals, reports…)	Scientific books on minerals
Electronic References, Websites	1-Scientific sources

Vocabulary details

1	Definition of metallurgy , Crystallization Dendritic, crystallizati is a m effect of cooling rate on the structure
2	Installing metal blocks, and common casting
3	defects Factor of atomic packing, Crystal levels and trends crystallography, The phenomenon of allotropic
4	Point and linear crystal lattice defects
5	Flexible and plastic forming
6	strain hardening, hot and cold forming
7	Recovery, recrystallization and crystal growth
8	stress curves, types of fractures, Rotation in ductile fracture a brittle fracture
9	Fatigue, the mechanism by which fatigue occurs, the fact affecting the extent of fatigue, the materials used for fatigue
10	Creep ,The mechanism of creep-resistant materials
11	Compound, phase, solid solution, system, equilibrium, all formation, mechanical mixture, eutectics
12	the heat equilibrium curve for a fully melted binary alloy in t liquid and solid states. Heat equilibrium curve for a binary all that is completely melted in the liquid state and insoluble in t solid state

13	the heat equilibrium curve for a binary alloy that is fully melted the liquid state and has limited melting in the solid state
14	the heat equilibrium curve for a binary alloy that is complet melted in the liquid state and forms a chemical compound wh frozen. system o
15	Iron, carbon dissolution in iron, heat equilibrium diagram for ironcarbon system
16	Complete the heat equilibrium diagram for the iron-carbon
17	Formation of austenite, The mechanism for converting pearlite in
18	Austenite transformations with constant temperature a transformations by continuous cooling
19	Heat treatments, annealing, tempering, quenching
20	Completing Heat treatments (tempering, quenching)
21	Surface hardening, carbonization of all types, and therm treatments followed by solid melting
22	22 Alloy steel: The effect of alloying elements on the properties steel
23	23 Stainless steel , tools steel
24	Cast iron production and heat treatments
25	Complementing the production of cast iron and its most import types
26	Definition of corrosion and the direct and indirect economic co of corrosion. Manifestations of corrosion and the mechanism

	which corrosion occurs
27	General corrosion, cavernous corrosion, galvanic corrosion, a passivity Faraday's law
28	Soil-associated corrosion, facultative corrosion, intercrystall corrosion and stress corrosion
29	The optimal choice of material for ambient softening design a operation
30	Ways to prevent corrosion

Course Description Form

1. Course Name: **Computer Applications (2) Excel Program**
2. Course Code: **C.A**
3. Semester / Year: **Second/annual**
4. Description Preparation Date: **8/2/2024**
5. Available Attendance Forms: **Theoretical + practical lectures**
6. Number of Credit Hours (Total) / Number of Units (Total) : **90**
1 theoretical hour + 2 practical hours
7. Course administrator's name (mention all, if more than one name)
Name: A.T. Zainab Abd Al Abbas Email: zainabalnamey68@gmail.com

8. Course Objectives	
Course Objectives	**Teaching and training students on methods of entering coordinates us different methods (absolute–relative–polar) and drawing using AutoCAD two– and three–dimensional space..**

9. Teaching and Learning Strategies	
Strategy	-1 - Theoretical lectures + practical lectures - 2- Use the blackboard - 3- Use the smart screen

10. Course Structure:

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-15	3 hours	Learn the student understand how to drawing prompts	Principles of drawing installation Dimensions on objects surfaces.	Blackboard theoretical and practi lectures.	Surprise theory exam .
16-30	3 hours	Application of Auto system instructions	System instructions AutoCAD and thr dimensional shapes	DATA SHOV Use the sm screen	Daily assignments correction

11. Core Evaluation

The degree is distributed
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Printed material teacher lectures and others
Main references (sources)	Help books from scientific websites
Recommended books and references (scientific journals, reports…)	1-Scientific sources 2- Websites
Electronic References, Websites	Continuing education courses

Computer basics curriculum and office applications
The third part

Curriculum vocabulary	The week
Introduction to PowerPoint and Word	the first
Run Microsoft Excel 2010 and explain the Microsoft Excel 2010 interface	the second
Mouse cursor shapes in Excel	the third
Explanation of the file tab	the fourth
Explanation of the home page tab	Fifth and sixth
Explanation of the page layout tab	Seventh and eighth
Explanation of the Insert tab	The ninth and tenth
Explanation of the chart tools “design” tab Explanation of the layout tools tab Explanation of the chart tools “format” tab	Eleventh and twelfth
Explanation of the formulas tab	The thirteenth, fourteenth and fifteenth
Explanation of the set of functions function library	Sixteenth and seventeenth
Explanation of the Data Tab	The eighteenth and nineteenth
Explanation of the Review Tab	Twenty, twenty-one and twenty-two
Explanation of the view tab	Twenty-third and twenty-fourth
Solve chapter questions	25th
The most important keyboard shortcuts	Sixth, seventh and twenty-eighth
Student activities for Excel	Twenty-nine and thirty

Course Description Form

1. Course Name: **Work Shops 2**
2. Course Code: **W.S**
3. Semester / Year: **Second/annual**
4. Description Preparation Date: **8/2/2024**
5. Available Attendance Forms: **Practical application workshops**
6. Number of Credit Hours (Total) / Number of Units (Total) : **240**
7. Course administrator's name (mention all, if more than one name)
Name: A.T Abbas fakery Email: abbas.alrubayie@atu.edu.iq

8. Course Objectives	
Course Objectives	**Discussing the practical side of the Mechanics Department/Product Branch and introducing the student to the most important mechan workshops and learning about their many different types and technological methods used in arranging the lines of each worksh according to the sequence of steps in making the works for ea workshop.**

9. Teaching and Learning Strategies	
Strategy	- Teaching how to use the machines correctly by having the student sta on the machine himself and operate it. - Learning by holding training courses and ongoing scientific seminars hone the student's talent in workshops

	- Publishing educational posters and information boards for ea workshop - Identify and learn how to use the personal protective equipment that t worker uses in the work environment to avoid the occurrence of vario types of accidents and make the work environment as safe and clean possible.

10 .Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Fundamentals and operations book.
Main references (sources)	Books on mechanical operations, sources maintenance of machines and equipment.
Recommended books and references (scientific journals, reports…)	Theoretical + practical reports
Electronic References, Websites	Internet sites and browsers

11.Course Evaluation
The degree is distributed Continuing education .

Weekly	vocabulary details
first	**Milling (5 weeks)** **Horizontal milling machine, main unit.** **Explaining the parts of the machine and the function of each one, operating the machines and choosing speeds and feeds, tools and**

	devices attached to the machines and their uses and methods of installing them, dividing heads, slots, rotating trays, universal milling heads, rack work heads, sewer work heads. **Milling balls:** **Types (cylindrical surface milling, shoulder milling, sewage work blocks, gear sharpening machines, special cylindrical forming machines with internal or peripheral holes)** **Uses of cables, methods of installing them, and installing artifacts** **Milling flat surfaces:** **Choosing and installing the appropriate cutter, adjusting the cutting and feeding speeds, how to install the workpieces, the sequence of operating operations, parts of the milling operations to prepare flat, inclined and opposite surfaces and create a group of different ducts.**
second	**Splitting heads and their uses:** **The dividing device and how to use it, simple dividing, dividing using circles of holes, differential dividing, dividing corners, doing exercises on different types of dividing (dividing parts, dividing corners).** **Milling straight gears on general machines and gear racks, rules for cutting gears, used chains, service equipment, and preparing processing and operating processes, parts for milling operations, reviewing the final dimensions, training on milling a gear arch and gear rack.**
the third **Fourth**	**Milling bevel gears on general machines:** **Milling helical gears and inclined racks on general machines:** **(The same method for milling straight gears)** **, milling the artifacts by dividing the corners** **Milling of internal sewers.** **Milling curves, explaining the general laws of each process, steps to**

Fifth	**implement it, preparing raw materials, choosing diameters, choosing operating rates, performing milling operations, reviewing the dimensions of the artifacts.** **Milling machine maintenance:** **Dismantling and installing the mandrel shaft.** **Opening, maintaining and installing the machine table** **Open the speed box for the main parts and learn how to change the speeds and reinstall them.** **Open the feed speed box and learn how to change it and reinstall it.** **Performing speed-changing operations using belts and pulleys and learning how to convert them and the process of tightening them.** **Identify the electrical control circuits for operating the milling machine.**
first	**- Grinding (5 weeks)** **Grinding machines:** **(Internal and external cylindrical, eccentric grinding, surface grinding, tool sharpening)** **Grinding stones:** **Their shapes, types, specifications, use of each, preparing grinding stones for operation (adjusting balance, leveling stones).** **Surface grinding machines:** **Explaining the parts of the machine and the function of each, the method of operation and adjusting the travel, the speed of feeding and feeding, methods of installing the workpieces, the use of cooling fluids and its types.** **Training on grinding flat, parallel, perpendicular and inclined surfaces.** **Drain grinding: Training on grinding different drains and round drains.**

Second	**1-Cylinder grinding:** **Parts of the machine, how to operate it, adjusting operating speeds and rates, testing the appropriate stone for the workpiece, installing the artifacts, using cooling fluids and measuring tools.**
third	**1-Eccentric grinding and grinding of cranks.** **2-Various grinding operations using previous grinding operations and training on them.**
forth	**Number sharpening machine:** **Operating tool sharpening machines, how to deal with them, and choosing the appropriate machine for sharpening the specific tool.** **How to install the cutting tool on the machine and determine the required angles for the cutting edge.** **Performing sharpening operations on models of a number of pieces (single-edged cutting tool, double-edged cutter, multi-edged cutting tool.**
fifth	**Maintenance of grinding machines (general internal and external cylindrical grinding machines)** **- How to replace the coolant and determine the required level.** **- Determine the lubrication locations for the machine and the appropriate type of oil and grease.** **- Performing the process of replacing the belts that transmit rotary speeds for stone and workpieces.**
first	**3-Scraping (5 weeks)** **Flat and vertical planers:** **The difference between using each of them, the parts of the machine and the method of work, the objects and surfaces that can be operated on each of them, the pens used, the methods for**

	installing them, the speeds of cutting and feeding, the inoculation rates, and the selection of each of them. **- Exercises for scraping straight and inclined surfaces at different angles.** **- Exercises to make internal and external drains of various shapes.**
second	**Exercises for scraping surfaces and complete items, parts of machines, V-blocks, drill bases.**
third	**Exercises on scraping arcs, making sewers on circular works using dividing devices on planers.**
forth	**Various scraping exercises.**
fifth	**Maintenance of skimmer machine:** **- Maintenance of the skimming machine.** **- Opening the crocodile and maintenance parts for the control parts along the stroke, as well as changing the location of the stroke.** **- Parts of various lubrication and lubricating operations and opening the oil pump.**
first	**4-Lathing (5 weeks)** **1- Eccentric turning and turning using a quadrilateral eyelet and methods of installing special workpieces.** **2-Exercises on various eccentric objects..**

second	**1- External and internal rotation lathe and formation lathe.** **2-Exercises for various lathe operations using shaping pens.** **Turret lathes:**
third	**A general idea about turret lathes and the use of speed and feed tables.**
forth	**Follow up on the operations of various products and prepare the sequence of their operations.** **1- The pens and tools used, the method of adjusting them, and preparation for making various crafts.** **2- How to prepare process tracking maps.**
fifth	**Lathe maintenance:** **1- Conduct disassembly and maintenance of triple and quadruple samples.** **2- Dismantle the moving crow and perform maintenance.** **3- Dismantling the small and large plotters and performing their maintenance** **4-Maintaining the main cutting speed box and calculating the feed speed.**
First	**5-Machines programmed using G-Code** **1- A historical overview of CNC machines, the differences between regular machines and CNC machines, stages of work on programmed machines.** **2- Definition of the parts of the machine, the movement axes, the**

	control panel, and the definition and operation of the machine in practice
second	**Program, program structure, how to program milling machines, functions used in programmed machines, zero point of the smachine, functions of movement levels.** **(G17, G18, G19) Motion coordinate functions (G90, G91).** **Simulation using simulation programs, how to use the program, program instructions.** **The control panel for the CNC machine according to the ISO9001 system, executing movements via the manual control device, zeroing the machine, zeroing the triangular machine, zeroing the workpiece, and methods for installing the workpiece.**
third	**Linear motion functions (G1, G2), functions for storing segment zero points (reference points)** **(51,G52,G53,G54,G55,G56,G57,G58,G59), auxiliary functions F,M,S,T** **Implement a face milling program using the instructions above and apply it to the calculator using simulation programs and implement it practically on the machine.** **Rotational motion functions G2, G3, repetition function, mirror image formation function.**
forth	**Create a program to implement circular cuts (quarter circle, semicircle, full circle) and apply it on the calculator using simulation programs and implement it practically on the machine.** **Radius compensation functions (calibration functions) G40, G41, G42, G43, G44** **Create a program to implement two exercises, one of which is relief**

	and the other is drilling, and apply it on the calculator using simulation programs and implement it on the machine using the above functions
fifth	**Fixed functions, single-stage drilling function, two-stage drilling function, tooth operating function, hole expansion function, sifting ring function, longitudinal slit operating function, circular drilling operating function.** **Implementing a program using the previous functions and applying it on a calculator using simulation programs and executing it on a machine.** **Maintenance of the machine, how to replace the parts, check the lubrication system in the machine and lubricate the rotating shaft, check the cooling system and replace the coolant.**
first	**6-Vocabularies for the workshop of programmed machines that operate with the CAD-CAM system** **1- Introducing students to programmed machines, their accessories, and accompanying programs.** **2- Identify the parts of the programmed lathe machine. Control panel keys and their respective functions, number of pieces, machine axes** **3-Use the CAD-CAM program to design an engineering product and implement the product on the calculator using a simulation method**
second	**Learn how to replace a damaged kit or define a new kit.** **Implementing an integrated product on the machine, starting from the design stage on the CAD/CAM program, through the simulation process, and ending with implementing the product on the machine.**
third	**Identify the parts of the programmed milling machine: the control panel keys and the function of each, the number of pieces, and the machine axes.**
forth	**Using CAD/CAM software to design an engineering product and implementing the product on a calculator using a simulation**

	method.
fifth	**Learn how to replace a damaged number or define a new number.** **Implementing an integrated product on the machine, starting from the design stage using the CAD/CAM program, through the simulation process, and ending with implementing the product on the machine.** **Carrying out many exercises on lathe and milling machines.**

Course Description Form

1. Course Name: **Machine Parts Technology**
2. Course Code: **M.P.T**
3. Semester / Year: **Second/annual**
4. Description Preparation Date: **8/2/2024**

5. Available Attendance Forms: **Theoretical lectures only**

6. Number of Credit Hours (Total) / Number of Units (Total) **: 90**

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

Name: P. Abbas Ali Mahmoud
Email: abbas.mahmood@atu.edu.iq

8. Course Objectives

Course Objectives	**Teaching second-year students on the mechanical design of machine pa based on the stresses affecting the part, mainly On the stress-strain curve, from which all information related to coefficient of vision and strain is extracted, and the design is according the curve on the side that relates to the flexibility stage, such as reach the plasticity stage, which relates to the subject of formation.**

9. Teaching and Learning Strategies

Strategy	- Theoretical lectures + use of the blackboard + Internet review + data sh + reports - Identify and learn how to use the personal protective equipme that the worker uses in the work environment to avoid the occurrence various types of accidents and make the work environment clean .

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	3 hours	Strength of Materials.	Stress analysis	the blackboard	duty.
3-8	3 hours	Types of ties and rivets.	. How to conn parts.	Blackboard DAT SHOW	Discussion assignments.
9-12	3 hours	Belts and belts.	Transmission.	DATA SHOW	discussion.
13-15	3 hours				
	3 hours	Types of main and auxili columns.	Machine columns.	DATA SHOW	Surprise exams And discuss within the lectu
	3 hours				

16-19 20-25 26-27 28-30	3 hours 3 hours	Types of joints. Types of gears and gears. Belts and belts. Types of forces.	Clutches spacers. Gear design. Movement control. Suppress simplify forces	the blackboard Blackboard DAT SHOW DATA SHOW the blackboard	Surprise exams. Surprise exams And discuss within the lectu Discussion assignments. Weekly assignment.

11.Course Evaluation

The degree is distributed :
1- 20 marks for the first semester for practical.
2- 20 marks for the second semester for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Subject teacher lectures
Main references (sources)	Websites
Recommended books and references (scientific journals, reports…)	Weekly scientific reports
Electronic References, Websites	Various websites and internet browsers

Theoretical Subjects	
Week No.	Subject Topics
1	Review of Strength of Materials
2-3	Riveted Joints.Types of Riveted Joints ,Design of Riveted Joints, Efficiency of Riveted Joints .
4-5	Welded Joints Types of welding Joints ,Design of welding Joints
6-7	Screwed Joints, Design of Bolts for Fastening , Design of Bolts for Power Transition .
8-9	Keyed Joints , Types of Key , Design of Sunk Key .
10-11	Frictional Clutches, Type of Frictional Clutches , Design of Frictional Clutches.
12-13	Types of Springs , Design of Springs
Week No.	Subject Topics
14-15	Types of Belts , Design of Belts.
16-17	Design of Shafts
18-19	Design of Journal Bearings
20	Selection of Ball Bearings
21-22	Design of Gears by Lewis Equation
23-24	Gears Trains
25-26	Design of Simple Gears Box
27-28	Worm Gears
29-30	Cams

Course Description Form

1. Course Name: **Manufacturing processes 2**
2. Course Code: **M.P**
3. Semester / Year: **Second/annual**
4. Description Preparation Date: **8/2/2024**
5. Available Attendance Forms: **Theoretical + practical lectures**
6. Number of Credit Hours (Total) / Number of Units (Total) : **120**
7. Course administrator's name (mention all, if more than one name)
Name: L. Faez jawad kadam Email: Faezjawad64@gmail.com
8. Course Objectives

Course Objectives	**Teaching second stage students on cognitive and practical skills different metal manufacturing methods (traditional and non-traditional) And the modern ones that include electronic computers in their work, well as preparing operating cards for mechanical products and calculat forces, time, and other factors related to manufacturing.**

9. Teaching and Learning Strategies

Strategy	- Theoretical lectures + practical + blackboard + data show

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1-8	4 hours	Types of interference permissions For mechanical parts.	Interferences allowances Mechanical.	the blackboard	Practical exam In workshops.
9-15	4 hours	Methods for measu roughness.	Roughness measurement.	Whiteboard +	Practical exam In workshops.
16-20	4 hours	And examination methods.	Product inspection resu	DATA SHOW	Practical exam In workshops.
21-25	4 hours	Quantitative products.	Types products.	DATA SHO the blackboard	Practical exam In workshops.
26-30	4 hours	Operation and configura methods Various mechanical parts.	Types operating methods And measurements.	Whiteboard + DA SHOW	Surprise exam Discussion within lecture..

11.Coure Evaluation

The degree is distributed

1- 20 marks for the first semester for practical.

2- 20 marks for the second semester for practical

3 - 10 marks for student activities

4 - 50 marks final exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Subject teacher lectures
Main references (sources)	Websites
Recommended books and references (scientific journals, reports…)	Weekly scientific reports
Electronic References, Websites	Various websites and internet browsers

Theoretical vocabulary

Weekly	vocabulary details
1	Geometric tolerances, duals, dual systems, orders of tolerances, dual uni basic deviations,
2	Types of tolerances, hole basic system, column basic system, symbols duals, tolerances for loose dimensions, detailed duals, selection of duals a their economic advantages.
3	Geometric tolerances in shape and position and types of shape and positi tolerances.
4	Measurement specifiers, design of measurement specifiers, types measurement specifiers (internal measuring specifiers, external measuri specifiers, adjustable measuring specifiers, solid measuring specifie special measuring specifiers).
5	Classification of metal fabrication, metal working, introduction to the theory blade formation and influencing factors, methods of fixing artifacts, includi round and non-round objects, and incisive borders.
6	Identifying the pens used and how to install them for crafts, shaping lat pens.

7	Identifying the types of turning pen angles, the effect of turning pen angles the cutting process, types of turning pen metals, cutting conditions, cutti elements, uses of cutting speeds, and the use of tables and speed map classification of cutting tools with respect to operating methods and number cutting edges.
8	The cutting edge, the emerging cutting edge and the theory of its formatic the factors that affect it, the factors that lead to reducing its size, cooling a its importance for cutting operations, various cooling liquids
9	How to conduct an operating card for a group of operations, calculate components, and calculate the cutting time for each operation.
10	How to take advantage of the sequence card to make a product path throu the different units. Factors that affect the choice of cutting speed (1- The effect of the properti of the cutting tool. 2- The effect of the operating elements. 3- The effect of t properties of the metal being worked
11	Automatic turret turning machines, studying the processes that can operated and analyzing the processes on the product, how to prepa operating cards.
12	Types of tools used and their arrangement on the front and rear hexagon and quadrilateral heads.
13	Studying how to program automatic programmed lathes and the facto influencing the operating steps.
14	Milling, learning about the operations that can be performed on milli machines, parts and components of horizontal and vertical milling machine and the nature of the work of each part.
15	Machine accessories, dividing heads, tools for attaching workpiece mandrels, and bushings.

16	Types of milling knives (disc and finger), gear sharpening knives, ang milling knives.
17	Explaining the steps for performing milling operations, choosing t appropriate machine, the initial dimensions of the artifacts, and methods attaching the artifacts.
18	Milling different types of gears (steel, conical, helical, and worm gears).
19	How to make a ghanfari clutch, a V-block clutch.
20	Operating rates, cutting and feeding speeds, and the basis for their selecti for the following various milling operations.
21	Skimming: Introduction to the types of planers (trolley, hopper, vertical), t operations that take place on the planing machine, the operating capabiliti available with each machine, and methods of attaching the work.
22	Operating rates, including cutting and feeding speeds, planer attachmer such as dividing heads or special devices, angles of planer pens, and types forces affecting them
23	The planer planer, clarification of (the cutting stroke, the return strok methods of connection to the planer machine and operating rates, calculati the cutting time for planing, preparing the planer sequence card.
24	Grinding: An introduction to the theory of cutting and the shape of the blade the grinding process, the grinding stones used (circumferential, face, sid cup, external, internal), their specifications and uses, attachment metho and balances.

25	Different grinding machines and the operating capabilities of each ty (external and internal cylindrical grinding machines, tool sharpeni machines).
26	Preparing a comprehensive operating card for all cutting operations.
27	Metal forming: theory of forming, foundations of cold and hot forming, types forming.
28	Rolling mill: The basics of rolling and its methods, rolled products, sequence of operatio in rolling, machines used, conditions for completing the rolling process. Extrusion: Foundations of metal extrusion and used metals, direct extrusion, rever extrusion, types of extrusion products.
29	Cutting and perforation: The foundations of shearing operations, types of molds and their parts, each case, dimensions of the raw material and methods of selecting calculating shear force. (Drag and deep drag): The foundations of pulling and deep pulling operations, calculating the pulli forces and special ratios in each case, types of pulling and their uses.
30	Study of unconventional methods in metal forming: A- Hydrostatic extrusion B-Using electrical discharge