Academic Program Description Form

University Name: Middle Euphrates Technology

Faculty/Institute: Technical Babel

Scientific Department: Power mechanics techniques

Academic or Professional Program Name: Technical Diploma

Final Certificate Name: Diploma in Mechanical Power Technologies

Academic System: Annual

Description Preparation Date: 15\2\2024

File Completion Date: 15\2\2024

Signature:

Head of Department Name:
Israa Adnan Najem

Signature:

Scientific Associate Name:
Oras Khudhayer Obayes

Date: 27/2/2024

Date: 27/2/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Chansaa Azez Obayes

Date:

Signature: 27/2/2024

Prof. Dr.
Eman Mohammed Abdullah
Dean of
Babylon Technical Institute

Approve

Approval of the Dean

1. Program Vision

Deepening the student's technical concepts and keeping up with modern technologies in the field of air conditioning, refrigeration, automobiles, and spinning and weaving, allowing the graduate to practice work in various sectors.

2. Program Mission

Starting from the edges of science to develop curricula theoretically and practically, using the latest teaching and training methods, and actively participating in developing the university environment and society.

3. Program Objectives

Preparing technical cadres to work in construction and reconstruction projects in the public and private sectors, with professionalism in the field of air conditioning and refrigeration, and with high sincerity.

Developing the performance efficiency of department members and enrolling them in specialized courses to update their information, develop their capabilities and experience, and provide them with sources and information to complete scientific research.

Working to provide an appropriate university environment for students and promoting social, sporting and other activities to strengthen the sense of belonging to the institute and the department.

Continuous updating of curricula theoretically and practically to reach the latest and most appropriate curricula in accordance with the principles of sustainable engineering and providing appropriate laboratories for this.

Establishing links of cooperation and interaction between the department, state departments, and the holy shrines

Providing service and training to all segments of society, such as the unemployed and families of martyrs, to contribute to providing job opportunities and eliminating unemployment.

4. **Program Accreditation**
No

5. **Other external influences**
No , There is no donor

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	**21**	**60**	**%35**	All courses are core and there are no electives
College Requirements	**21**	**60**	**%35**	All courses are core and there are no electives
Department Requirements	**19**	**57**	**%33**	All courses are core and there are no electives
Summer Training	\	\	\	All courses are core and there are no electives
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
1	Cm1	Car maintenance(1)	2	3
1	CE1	Car Electricity (1)	1	2
1	EM	Engineering mechanics	2	1
1	MA	mathematics	2	
1	CA	Computer applications	1	2
1	ML	Mechanics lab		4
1	ED	Engineering Drawing		3
1	RD	Rights and democracy		2
1	FT	Fluids and thermodynamics	2	1
2	CM	Car mechanic	2	

2	IC	Internal combustion engines	2	2
2	CB	car body	1	2
	CM	Car maintenance (2)	2	6
2	CE2	Car Electricity(2)	1	2
2	IM	Industrial management	2	
2	ID	Industrial drawing		3
2	CA	Computer applications	1	2
2	P	Project	2	

8. Expected learning outcomes of the program

Knowledge	
Identify car parts and their respective functions.	Identify faults
Skills	
Operating and maintaining cars.	Work on modern devices. Working in state departments. Working on the computer
Determine fault, oil selection and maintenance	Work on modern devices.. Working on the computer
Ethics	
Creating a useful person	Work on modern devices.

9. Teaching and Learning Strategies

1. Written lectures.
2. Practical training.
3. Videos using the data viewer.
4.Scientific visits

10. Evaluation methods

1. Continuous testing.
2. Pre and post questions.
3. Semester and final exams.

11.Faculty
Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor	Mechanical engineering	thermal combustion systems			1	
Lecture	Electrical power engineering	Electrical power engineering			1	
Lecture	Mechanical engineering	Refractory specialty			1	
Lecture	Mechanical engineering	Engineering education technology			1	
Lecture	Mechanical engineering	Specialization in applied mechanics			2	
Lecture	Materials engineering	Ceramic engineering and building materials			1	
Lecture	Materials engineering	Ceramic engineering			1	
Lecture	Master's degree in Physics	Electro optics			1	
Lecture assistant	Electrical power engineering	Electrical power engineering			1	
Lecture assistant	Mechanical engineering	Mechanical automation1			1	
Lecture assistant	math Science	Dynamic topology			1	

Professional Development

Mentoring new faculty members

The head of the department received the new appointees, welcomed them, and directed them to their workplaces in the department, each according to their specialization and academic achievement, so that they could perform the work assigned to them in the best way, for the purpose of continuing the scientific and educational process and directing it in the correct manner in a way that serves the interest of the department and the institution in general.

Professional development of faculty members
1- - Teamwork within the group effectively and actively 2- - Manage time effectively and set priorities with the ability to work on regular schedules 3- - Leadership and the ability to direct and motivate others 4– - Independence at work.

12.   Acceptance Criterion

1– Iraqi nationality

2- Possession of an Iraqi preparatory school certificate supported by certification from the General Directorate of Education in the governorate or an equivalent certificate.

3- The student must be born in 1994 onwards.

4– Successful in the medical examination according to the conditions for each study, and the

blind student (who meets the conditions for applying for appropriate humanitarian studies) will be submitted through central admission.

5- Devoted to study. It is not permissible to combine work and study (at the same time) in colleges and morning institutes. This includes employees of all government institutions. In order for them to continue studying, they must obtain a study leave from their departments starting in accordance with the instructions in force. It is not permissible to combine two studies either, and in the event of a dispute being proven. He writes to the Ministry to cancel his acceptance (the student employee can postpone his studies according to the instructions in order to fulfill the condition of completing two years of service - satisfactory to be entitled to obtain study leave and in accordance with the instructions for granting study leave).

6- Among my graduates:

  A- The current academic year.

 B- The previous academic year of those who are not centrally accepted into any college or institute, and they are accepted according to the minimum limits for the year of their graduation, and if it is proven that

  The student's acceptance into any college or institute will be returned to his original acceptance and it will be considered a year of failure for him.

7- Non-Iraqi students who hold an Iraqi preparatory certificate and are accepted centrally will be notified in writing to review the Central Admissions Department / Expatriates Division to state their exemption or demands for tuition fees in foreign currency according to the controls in Chapter Seven.

13.   The most important sources of information about the program

1. Methodical books.

2. Lectures.

3. Internet

14.	Program Development Plan

1.Holding scientific seminars

2. Holding internal courses
3. Participation in external courses.

				Required program Learning outcomes											
				Knowledge				Skills				Ethics			
Year/Level	Course Code	Course Name	Basic or optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
the first	Cm1	Car maintenance(1)	Basic	*				*				*			
the first	C1	Car Electricity (1)	Basic	*				*				*			
				*				*				*			
the first	EM	Engineering mechanics	Basic	*				*				*			
the first	MA	mathematics	Assistant	*				*				*			
the first	CA	Computer applications	Assistant	*				*				*			
the first	ML	Mechanics lab	Basic	*				*				*			

the first	ED	**Engineering Drawing**	**Basic**	*				*				*			
the first	RD	**Rights and democracy**	**Assistant**	*				*				*			
the first	FT	**Fluids and thermodynamics**	**Basic**	*				*				*			
The second	CM	**Car mechanic**	**Basic**	*				*				*			
The second	IC	**Internal combustion engines**	**Basic**	*				*				*			
The second	CB	**car body**	**Basic**	*				*				*			
The second	CM	**Car maintenance (2)**	**Basic**	*				*				*			
The second	CE2	**Car Electricity(2)**	**Basic**	*				*				*			
The second	IM	**Industrial management**	**Assistant**	*				*				*			

The second	ID	Industrial drawing	**Assistant**	*				*				*			
The second	CA	Computer applications	**Assistant**	*				*				*			
The second	P	project	**Basic**	*				*				*			
The first	EL	English language	**Assistant**	*				*				*			
The first	BC	Baath crimes	**Assistant**	*				*				*			

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

Course Description Form

1. Course Name:	Car Electricity (1)

2. Course Code: : CE1

3. Semester / Year: The first is an annual course

4. Description Preparation Date: **15\2\2024**

5. Available Attendance Forms: Theoretical and practical study

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

7. Course administrator's name (mention all, if more than one name)
Name: Inas Jabbar Mohammed Email: inasalrubaiy1973@gmail.com

8. Course Objectives	
Course Objectives	**Teaching the student electrical terminology, types of connections, and parts of the electric car**

9. Teaching and Learning Strategies	
Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

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

As in attachment	theoretical=2 Practical=3	Teaching the student to identify faults -Maintenance of fault	Ignition system	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Automotive Electrical Systematic Book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Vocabulary details
1	A brief history of the car, an explanation of the tools, tools and devices used in maintenance, the basic car components (chassis, engine, clutch, powertrain, drive shaft, rear axle, front axle, suspension, steering)
2	Types of gasoline engines (four-stroke, two-stroke). Explanation of four-stroke engines
3	Kirchhoff's first and second laws, mathematical problems, a set of definitions
4	Types of electrical circuits (to connect resistors), series, parallel, mixed, mathemati problems
5	The energy sources in the car include (the battery, types of batteries, battery components, charging methods for all types)
6	Solutions used for the three types of batteries, methods of chemical reactions, devices used test solutions, maintenance methods, measuring solution density.
7	Connecting energy sources (batteries) to the electrical circuit in three types, connect sources in series, parallel, and mixed, connection characteristics for each case.

8	Mathematical problems to calculate the final value of the energy source in an electrical circu
9	A general idea about alternating current, definitions of alternating current, and reasoning about which part of the car works
10-12	Magnetism, general properties of magnetism, definitions of types of magnets, lines magnetic force, Magnetic flux density B, magnetic field intensity Ĥ, magnetic flux ø, magnetic flux conductivity θ The relationship between electrical energy and magnetic energy, how to convert between th two energies, Oersted phenomenon, Faraday's law, Lenz's law, Electromagnetic induction, types of induction, self-induction, mutual induction, kinc induction
13-14	The charging circuit in the car, a general idea about the direct current (DC) generator, its pa components, principle of operation, general diagram of the generator's electrical circuit.
15-16	Charging circuit for an alternating current (AC) generator, its parts, components, work principle, general diagram of the generator's electrical circuit
17-18	The starter motor (the predecessor), its parts, components, principle of operation, gene diagram of the electrical circuit of the motor
19-20	Ignition system, first generation (regular), parts, working principle, general diagram of electrical circuit of the system.
21	Mug candles, parts, working principle, maintenance and inspection, general diagram of electric circuit for a mug candle
22-23	Main, side and interior lighting system, components, working principle, general scheme of systems
24-25	Auxiliary devices in the car, (fuel gauge, oil pressure gauge, charging current gau temperature gauge)
26	The electrical circuit to control car doors and windows (opening and closing)

27	Car air conditioning and heating devices (electrical system)
28	Windshield wiper device (electrical circuit), fuel pump device (electrical circuit)
29-30	The electrical circuit for audio and video audio, the early warning system against theft, the electrical circuit

Course Description Form

1. Course Name	Engineering mechanics
2. Course Code: : EM	
3. Semester / Year: The first is an annual course	
4. Description Preparation Date:15\2\2024	
5. Available Attendance Forms: Theoretical and practical study	
6. Number of Credit Hours (Total) / Number of Units (Total): 90	
7. Course administrator's name (mention all, if more than one name)	
Name: Layth Saleem Kamal Email: Layth.kamal@atu.edu.iq	
8. Course Objectives	
Course Objectives	**Teaching the student about car breakdowns and how to maintain them**
9. Teaching and Learning Strategies	
Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=3	The student can learn about general mechanics	car maintenance	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Modern car maintenance book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
1	Introduction & topics of mechanics Definition of mechanics science & the branches basic quantities & units , Applications by using mechanics in the life
2-3	Force , resolution and resultant i- vectors ii- analytic + applications
4-5-6-7	Moment of the force & applications Couples , applications
8-9	Equilibrium , definition & the conditions and applications
10	Free body diagram , procedure of the drawing "F.B.D"
11-12	Friction , theory and applications types of the friction , coefficient of friction , angle of friction
13	Center of gravity & centroid applications , lines
14	Center of gravity & centroid , application , single area
15-16	Moment of inertial , definition , single area
17-18	Moment of inertial , application i- parallel axis theory ii- transfer of axis
19	Dynamics science definition the Newton's second law and application

20	Rectilinear motion definition and applications	
21	Free fall lows & application	
22	Curvilinear motion low's & applications	
23	Rotational motion about the fixed axes	
24	Strength of material , sort of the strain	
25	Strength of material , sort of the stress	
26	Drawing the curvature of the stress force	
27	Tension and compresses	
28	Sheering force , definition and application	
29	Pascal & Archimedes theory and lows , applications	
30	Benully formula , applications	

Course Description Form

1. Course Name   Car maintenance(1)
2. Course Code: : Cm1
3. Semester / Year: The first is an annual course
4. Description Preparation Date: **15\2\2024**
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   150
7. Course administrator's name (mention all, if more than one name)
Name: Layth Saleem Kamal Email: Layth.kamal@atu.edu.iq
8. Course Objectives

Course Objectives	**Teaching the student about car breakdowns and how to maintain them**

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy

| | 4- E-learning strategy |
| | 5- E-learning strategy |

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=3	Teaching the student about car breakdowns and how to maintain them	car maintenance	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Modern car maintenance book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Vocabulary details
1	A brief history of the car, an explanation of the tools, tools and devices used in car maintenance, the basic car components (chassis, engine, clutch, powertrain, drive shaft, rear axle, front axle, suspension, steering)
2	Types of gasoline engines (four-stroke, two-stroke). Explanation of four-stroke engines
3	Kirchhoff's first and second laws, mathematical problems, a set of definitions
4	Types of electrical circuits (to connect resistors), series, parallel, mixed, mathematical problem.

5	The energy sources in the car include (the battery, types of batteries, battery components, charging methods for all types)
6	Solutions used for the three types of batteries, methods of chemical reactions, devices used to test solutions, maintenance methods, measuring solution density.
7	Connecting energy sources (batteries) to the electrical circuit in three types, connecting sources in series, parallel, and mixed, connection characteristics for each case.
8	Mathematical problems to calculate the final value of the energy source in an electrical circuit
9	A general idea about alternating current, definitions of alternating current, and reasoning about which of the car works
10-12	Magnetism, general properties of magnetism, definitions of types of magnets, lines of magnetic force, Magnetic flux density B, magnetic field intensity $\hat{H}$, magnetic flux ø, magnetic flux conductivity θ The relationship between electrical energy and magnetic energy, how to convert between the two energies, Oersted phenomenon, Faraday's law, Lenz's law, Electromagnetic induction, types of induction, self-induction, mutual induction, kinetic induction
13-14	The charging circuit in the car, a general idea about the direct current (DC) generator, its parts, components, principle of operation, general diagram of the generator's electrical circuit.
15-16	Charging circuit for an alternating current (AC) generator, its parts, components, working principle, general diagram of the generator's electrical circuit
17-18	The starter motor (the predecessor), its parts, components, principle of operation, general diagram of the electrical circuit of the motor
19-20	Ignition system, first generation (regular), parts, working principle, general diagram of the electrical circuit of the system.
21	Mug candles, parts, working principle, maintenance and inspection, general diagram of the electric circuit for a mug candle

22-23	Main, side and interior lighting system, components, working principle, general scheme of the Systems
24-25	Auxiliary devices in the car, (fuel gauge, oil pressure gauge, charging current gauge, temperature gauge)
26	The electrical circuit to control car doors and windows (opening and closing)
27	Car air conditioning and heating devices (electrical system)
28	Windshield wiper device (electrical circuit), fuel pump device (electrical circuit)
29-30	The electrical circuit for audio and video audio, the early warning system against theft, the electrical circuit

Course Description Form

1. Course Name: Applications Of Computer
2. Course Code: : A.C
3. Semester / Year: The first is an annual course
4. Description Preparation Date: **15\2\2024**
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   90
7. Course administrator's name (mention all, if more than one name)

Name: Alaa Hussein Majeed
Email: alaa.majeed.bib23@atu.edu.iq

8. Course Objectives

Course Objectives	**Teaching the students about the computer and some applications.**

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1:	theoretical=1 Practical=2	Data show, Computer Machine, Screen Show	Computer Definition, Software, Hardware, Computer Genertions.	Lectures and practical training	Written exams And practical training
Week2:	theoretical= 1 Practical=2	Computer Mechine, Ms-Dos system	MS-DOS Operating System, Definition, Internal commands, External Commands	Lectures and practical training	Written exams And practical training
Week3-12:	theoretical= 1 Practical=2	Computer Mechine, MS-DOS System	Internal commands: Dir , Del , Time , Date , Cls , RD, CD, MD, Echo, Prompt, Ren < copy , vol, ver , path . External Commands: Edit , tree ,	Lectures and practical training	Written exams And practical training

| Week13-27: | theoretical= 1

Practical=2 | Computer Mechine, Windows System | xcopy , format , chkds diskcopy

Operating System Windows: Disktop, Icons, Taskbar, Start, Shutdown, My computer, Control Panel, Windows media player, Calculator, Paint, Note Pad, Help | Lectures and practical training | Written exams And practical training |
| Week28-30: | theoretical=1 Practical=2 | Computer Mechine, Screen Show. | Computer Viruses, Antivirus. | Lectures and practical training | Written exams And practical training |

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer and its Applications
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	reports
Electronic References, Websites	Internet

Week	Vocabulary details
Week1:	Computer Definition, Software, Hardware, Computer Genertions.
Week2:	MS-DOS Operating System, Definition, Internal commands,Externalcommands
Week3-12:	Internal commands: Dir , Del , Time , Date , Cls , RD, CD, MD, Echo, Prompt, Ren < copy , vol, ver , path . External Commands: Edit , tree , xcopy , format , chkdsk, diskcopy
Week13-27:	OperatingSystem Windows: Disktop, Icons, Taskbar,Start, Shutdown, My computer,Control Panel, Windows media player,Calculator,Paint,Note Pad, Help
Week28-30:	Computer Viruses,Antivirus.

Course Description Form

1. Course Name: Engineering Drawing
2. Course Code: ED
3. Semester / Year: The first is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   90
7. Course administrator's name (mention all, if more than one name)
Name: Alaa Shaker Aobida Email: alaashaker2025@gmail.com
8. Course Objectives

Course Objectives	Teaching the student to perform engineering drawing using the AutoCAD program

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	Practical=3	Teaching the student to perform engineering drawing using the AutoCAD program	AutoCAD program	Lectures and practical training	Oral exams And practical training

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)	Engineering drawing book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	reports
Electronic References, Websites	Internet

Week	Vocabulary details
1	The importance of engineering drawing - The importance of using a computer to implement engineering drawing - Drawing board sizes (standard) - An overview of the AutoCAD program
2	Types of lines in engineering drawing - using drop-downs for lines and texts
3-4	Basic shapes
5-6	Drawing adjustments - Drawing aids
7-8-9	Engineering operations - dimensioning - applications to previous concepts
10-11-12-13	Perspective Drawing - Drawing a perspective containing a circle, rectangle, triangle and polygon
14-15	Projection theory - drawing simple projections
16-17	Placing dimensions on perspective and projections

18-19-20	Conclusion of the third site from two sites
21-22-23	Cutting theory - shapes of cutting lines according to the material - drawing cut sections
24-25-26	Drawing projections cut from a specific projection
28-27	Drawing partially cut projections
30-29	Applications and projects

Course Description Form

1. Course Name: Rights and democracy
2. Course Code: RD
3. Semester / Year: The first is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical
6. Number of Credit Hours (Total) / Number of Units (Total):   60
7. Course administrator's name (mention all, if more than one name)
Name: ASSAD dakel hadi EMAIL:assad.hadi@atu.edu.iq
8. Course Objectives

Course Objectives	**Teaching students the basic concepts of human rights and democracy**

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy

	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	Therotical=2	Teaching students basic concepts of human rights democracy	Human rights	Lectures and practical training	Oral exams And practical training

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)	Systematic human rights book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	reports
Electronic References, Websites	Internet

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 5- 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

1. Course Name Fluid and thermodynamics
2. Course Code: : F.T.D
3. Semester / Year: The first is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   150
7. Course administrator's name (mention all, if more than one name)

Name: Zahraa Kazem Rodhan

Email: zahraakaz78@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the student the basic concepts of fluid mechanics and thermodynamics

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in the attach	theoretical=2 Practical=1	Teaching the student the basic concepts of fluid mechanics and thermodynamics	Types of unit systems, density,specific volume, pressure, temperature (Celsiusand absolute), Properties of fluids : difference between fluids and solid metals, difference between liquids and gases	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Modern car maintenance book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific	reports

journals, reports…)	
Electronic References, Websites	Internet

Week No.	Syllabus
1	Types of unit systems, density, specific volume, pressure, temperature (Celsius and absolute),Properties of fluids : difference between fluids and solid metals, difference between liquids and gases
2	Definition of density, relative density, specific weight, specific volume, ideal fluid, real fluid, examples.
3	Shear stress, dynamics of fluid flow, Newton's Law of viscosity, dynamic viscosity, kinematic viscosity , surface tension.- Capillarity, liquid vapour pressure,
4-6	Pressure, liquid pressure head, Pascal aw of pressure, variation of liquid pressure heat with respect to gravity, pressure at a datum for stationary liquid.
	Absolute pressure, gage pressure, barometer, pressure gage equipment.
	Bourdon gage, Piezometer, U tube manometer, comparative gage.
7	Fluid motion, fluid flow, pressure of fluid flow, laminar flow, turbulent flow, velocity profile of flow, Reynold's number.
8	Flow rate, volumetric flow rate, mass flow rate, - Continuity equation, problems on continuity equation for uncompressibil fluids.
9-11	Bernoulli equation and application.
12-14	First law of thermodynamics, kinds of energy, (dynamic energy, potential mechanical energy, internal energy, heat , work), work of a system represented on pressure – volumle diagram, energy of flow, enthalpy, energy – conservation equation of first law of thermodynamics.
	Classifications of systems, application of first law of thermodynamics on closed systems, energy equation for steady flow, some application on first law for steady state open systems, application on first law for steady state open systems, application on (nozzle, diffuser, through, condenser, boiler, turbine, compressor, heat exchanger, open plane), representation of work for open systems for steady flow on pressure volume diagram, examples.
15	5) Second law of thermodynamics : Reversible process, entropy, temperature-entropy diagram, coordinates place on T-S diagram, cycles, work of cycle, thermal efficiency of cycle, examples. State of second law for heat engine, and for heat pump.
16-19	Ideal Gas : Specific heat at constant volume, specific heat at constant pressure, equation of ideal gas state, gas constant, universal gas constant
	Constant volume process, constant pressure process, constant temperature process, studying of process on P – V diagram and T – S diagram, examples.
20-24	Adiabatic process, isentropic process, studying of process on P -V diagram and T-S diagram , examples.
	standard air cycles :

Week No.	Syllabus
	Carnot cycle, reversed carnot cycle, studying of cycle on P – V diagram and T – S diagram, examples.
	Auto cycle, dessel cycle, studying of cycle on P – V diagram and T – S diagram, calculating heat changed, work and efficiency of each cycle.
	Combined cycle, studying of cycle on P – V diagram and T – S diagram, finding heat changed, work , efficiency , parameters affecting on standard air cycle efficiency, comparision between, Autto, dessel, dual cycles), examples.
25-28	Heat transfer by conduction : Steady state heat conduction, conduction through homogenous plane wall, conduction through composite wall, thermal resistance, heat conduction through homogenous cylindrical wall, heat conduction through multi layers cylindrical wall, examples.
	Heat transfer by convection : free &forced-thermal resistance
	Heat transfer by radiation, definition of thermal radiation, emissivity of black body, Stefan – Boltzmann law for radiation, emissivity
29-30	Heat exchangers and their types, logarithmic mean temperature difference, calculations of heat exchangers, effectiveness of heat exchangers, examples.

Course Description Form

1. Course Name Car mechanic
2. Course Code: : CM
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical study
6. Number of Credit Hours (Total) / Number of Units (Total):   60
7. Course administrator's name (mention all, if more than one name)
Name: Asraa Adnan Nagem Email: asraa@atu.edu.iq
8. Course Objectives

Course Objectives	Teaching the student the basic concepts of automobile

	mechanics and how to solve problems

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2	Teaching the student the basic concepts automobile mechanics and how to solve problems	types gearing system	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Automotive mechanics textbook
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	reports
Electronic References, Websites	Internet

Week	Item
1	Automotive performance , the total resistance affecting car motion
2	Traction effort
3-4	Surplus effort & examples
5-6	Gears , types gearing system , motion between two gears , selecting the best gear ratio , ear axle ratio , overall gear ratio examples
7	Bearing types , calculations and design of sliding bearing
8	Shafts , types , calculation and design of the shafts
9-10-11	Clutch , types , design , power transmitted , calculation
12-13-14-15	Belts . types , system types , calculation of power transmitted from flat and v. type.
16-17-18-19-20	Brakes , types systems function , calculation of stopping distance , declaration , load transfer during brake , braking force on front and rear wheel , wheel piston diameter , all these calculation based on disc and shoes brake type.
21-22	Suspension system types advantages and disadvantages Calculation of leaf and coil spring
23-24	Steering system , calculations , types
25-26	Overturning and sliding speed
27	Piston , types , calculation of thermal and tensile stress
28	Crankshaft , types , calculation of thermal and tensile stress
29-30	Study of various design car system (car with front engine mounted and rear wheel drive , car with front engine and rear wheel drive , car with rear engine mounted and wheel drive system

Course Description Form

1. Course Name: Mathematics
2. Course Code: : M
3. Semester / Year: The first is an annual course
4. Description Preparation Date: 15\2\2024
5. Available Attendance Forms: Theoretical study

6. Number of Credit Hours (Total) / Number of Units (Total): 60

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

Name: Dalael Saad Abdul-Zahra
Email: dalael.abdulzahra.iba5@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the student, a number of topics, such as matrices, determinants, functions, differentiation and integration, and statistics.

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	theoretical=2	The student learns about matrices	Matrices, determinants, and their properties	Lectures	Homework's assignments, and written examinations
2	theoretical=2	The student learns about linear equations	Solving linear equations Linear equations, Cramer's method, applications, arc analys vectors	Lectures	Homework's assignments, and written examinations
3	theoretical=2	The student learns about Vectors	Vectors, analysis of limits, types vectors, quantities, standard vectors, curve algebra, vector arithmetic operations	Lectures	Homework's assignments, and written examinations
4	theoretical=2	The student learns About operations on	Unit orthogonal vectors, vect scaling, scalar and cross	Lectures	Homework's assignments,

		Vectors	product, applications to vect[...] arc moment analysis		and written examinations
5	theoretical=2	The student learns About logarithms	Logarithm, definition of logarithm, laws of logarithm[...] and how to use them, solving logarithmic equations	Lectures	Homework's assignments, and written examinations
6	theoretical=2	The student learns About trigonometric Functions	Trigonometric ratios and the relationship between them, some laws in trigonometric ratios, the function, the mean[...] of the function, the independ[...] and dependent variables, the function	Lectures	Homework's assignments, and written examinations
7	theoretical=2	The student learns About algebraic functions,	Measurements, purpose of trigonometric and algebraic functions, applications of lin[...] velocity, areas	Lectures	Homework's assignments, and written examinations
8	theoretical=2	The student learns Derivative's	Details, derivative, derivative[...] algebraic functions, application[...] the implicit function chain rule	Lectures	Homework's assignments, and written examinations
9	theoretical=2	The student learns Derivative's	Higher order derivative, derivative of the exponential function, derivative of the logarithmic function	Lectures	Homework's assignments, and written examinations
10	theoretical=2	The student learns Derivative's	Derivative of trigonometric functions, derivative of circu[...] functions	Lectures	Homework's assignments, and written examinations
11	theoretical=2	The student learns Partial Derivative's	Partial differentiation	Lectures	Homework's assignments, and written examinations
12	theoretical=2	The student learns Applications on Derivative's	Applications on the derivativ[...] (slope equation, perpendicul[...] velocity and acceleration)	Lectures	Homework's assignments, and written examinations
13	theoretical=2	The student learns Applications on Derivative's	Derivative applications (instantaneous change)	Lectures	Homework's assignments, and written examinations
14	theoretical=2	The student learns Applications on Derivative's	Increasing, decreasing, maximum and minimum lim[...] inflection points, graphing th[...] function	Lectures	Homework's assignments, and written examinations
15	theoretical=2	The student learns Integration	Integration, indefinite integration, integration of algebraic functions	Lectures	Homework's assignments, and written examinations
16	theoretical=2	The student learns exponential and logarith[...] functions	Integration of exponential logarithmic functions	Lectures	Homework's assignments, and written examinations
17	theoretical=2	The student learns Integration	Integration of trigonometric functions	Lectures	Homework's assignments, and written examinations
18	theoretical=2	The student learns Integration	Definite integral, application[...] (distance under the curve, distance between the curve)	Lectures	Homework's assignments, and written examinations
19	theoretical=2	The student learns The rotational	The rotational magnitudes a[...] arc length of the curve	Lectures	Homework's assignments, and written

		Magnitudes			examinations
20	theoretical=2	The student learns Approximation	Approximation in integration (trapezoid rule, Simpson's ru	Lectures	Homework's assignments, and written examinations
21	theoretical=2	The student learns Integration	Integration methods, retail integration	Lectures	Homework's assignments, and written examinations
22	theoretical=2	The student learns Integration	Integration by compensation method	Lectures	Homework's assignments, and written examinations
23	theoretical=2	The student learns Integration	Integration by partial fraction method for the first	Lectures	Homework's assignments, and written examinations
24	theoretical=2	The student learns Solving differential equations of the first order, i.e., discrete homogeneous	Solving differential equation of the first order, i.e., discr homogeneous	Lectures	Homework's assignments, and written examinations
25	theoretical=2	The student learns Differential equations	Differential equations - line applications	Lectures	Homework's assignments, and written examinations
26	theoretical=2	The student learns On C.N	Complex numbers - addition subtraction - division - multiplication	Lectures	Homework's assignments, and written examinations
27	theoretical=2	The student learns Applied formula	Applied formula: Converting carpentered characteristic to linear and vice versa	Lectures	Homework's assignments, and written examinations
28	theoretical=2	The student learns On Statistical	Statistical operations, freque distributions, histograms, frequency curve	Lectures	Homework's assignments, and written examinations
29	theoretical=2	The student learns On Statistical operations	Statistical operations, freque distributions, histograms, an frequency curve	Lectures	Homework's assignments, and written examinations
30	theoretical=2	The student learns On Statistical operations	Mean, range, standard deviation, variance	Lectures	Homework's assignments, and written examinations

11. Course Evaluation

The degree is distributed
 1- 10 marks for the first theoretical semester and 10 marks for practical.
 2- 10 marks for the second semester, theoretical + 10 marks 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
Main references (sources)	Calculus Analysis Geometry, Thomas
Recommended books and references (scientific	Scientific research in the specialty

journals, reports…)	
Electronic References, Websites	Internet

Course Description Form

1. Course Name :Internal combustion engines
2. Course Code: : I.C.E
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical study and practical
6. Number of Credit Hours (Total) / Number of Units (Total): 120
7. Course administrator's name (mention all, if more than one name)
Name: Ali Assim Abd Al-Razak Email: ali.nit2009@atu.edu,iq
8. Course Objectives

Course Objectives	Teaching the student the basic concepts of automobile mechanics and how to solve problems

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required	Unit or subject	Learning	Evaluation

		Learning Outcomes	name	method	method
As in attachment	theoretical=2 partical=2	**Teaching the student the basic concepts of automobil mechanics and how to solve problems**	Basic engine nomenclature	Lectures and practical training	Oral exams And practical Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Internal combustion engines book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
1	Basic engine nomenclature
2	Four – stroke cycle spark – ignition engine four – stroke cycle compression ignition engine
3	Valves timing for 4- stroke engine
4	Two – stroke engine , comparison of two stroke and four stroke engine , valves timing for 2- stroke engine
5	Save engine systems for 2- stroke engines
6-7-8	Engine performance and resting , performance parameters for 4-strike engine and 2- stroke engine , basic measurements indications
9-10-11	Performance of S. I. Engine performance of C. I. Engine Illustrative examples
12	Engine heat balance sheet
13	Effect of strength mixture (Fr) on engine performance factors
14	Combustion in S. I. Engines stages of combustion in S. I. Engine
15	Inject of engine variable on stages of combustion in S. I. Engine
16	Detonation or knocking in S. I. Engine effects of detonation
17	Control of duration , pre-ignition , effect of pre-ignition on engine
18	S.I. engine combustion chamber designs
19	Carburetion in S. I. Engine

20	Simple carburetor – calculation of the Air-fuel nation for a simple carburetor
21	Injection fuel systems in S.I. engine
22	Combustion in C. I engines , stages of combustion in C.I. engine , variable affecting , stages of combustion
23	Diesel knock methods of controlling diesel knock
24	C. I. Engine combustion chamber designs
25	Fuel injection in C. I. Engine requirements of diesel injection system , types of injection systems , types of fuel injectors and nozzles
26	Fuel , specification , fuels for S. I. Engines , Octane number requirement , additives , fuels for C. I. Engine Octane number additives
27	Effect of supercharging on performance of the engine supercharging types
28	Engine friction and lubrication , additives
29	Pollutants from S. I. Engine , effect of engine maintenance on exhaust emissions , emissions control
30	Diesel emissions , diesel smoke and its control comparison diesel and gasoline emissions

Course Description Form

1. Course Name: Car maintenance2
2. Course Code: : M.C.2
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   150
7. Course administrator's name (mention all, if more than one name)
Name: Raed Salman Saeed Email: raed.saeed@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the student about car breakdowns and how to maintain them

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=3	Teaching the student about car breakdowns and how to maintain them	Clutch, types of single and multi-disc clutches,	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Modern car maintenance book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

the week	Vocabulary details
1-2	Clutch, types of single and multi-disc clutches, clutch components (friction disc - pressure disc - release seat) clutch troubles, diagnostic and maintenance methods
3-4-5	The transmission group, the importance of the transmission group, the parts of the transmission group and the harmonic slip - the harmonic device, the troubles of the transmission group and methods of detecting and maintaining them
6-7-8-9	Autonomous transmission group, fluid delivery system, torque converter, installation of the autonomous transmission group, how it works, control system of the autonomous transmission group, group malfunctions and methods for detecting .and maintaining them
10	Drive shaft, its types (hollow and solid, universal joints, their installation and operation, drive shaft problems, methods of detecting and maintaining them, four-wheel drive cars and four-wheel drive cars 4matic
11-12	The rear axle, an explanation of its various parts, how it works, its malfunctions, and methods of detecting and maintaining it
13-14	Suspension, its types (independent and non-independent), complete suspension, independence, the idea of electronically controlled hydraulic suspension.
15	Drive train, group components, types of steering boxes
16	Drive train problems and ways to detect and maintain them
17-18	Hydraulic drive group (types), how it works, hydraulic drive group problems, and methods of detecting and maintaining them
19	Types of springs (leaf and spiral), columns that deter shocks, problems with springs, and methods of detecting and maintaining them.
20	Wheel angles
21-22	Parking, types of parking (disc, drum, hydraulic and pneumatic), the idea of auxiliary systems ABS, anti-lock system, anti-slip system during acceleration (ASD), automatic distance maintenance system Distomatic
23-24	Suspension, its types (independent and non-independent), complete suspension, independence, the idea of electronically controlled hydraulic suspension.
25	Drive train, group components, types of steering boxes
26	Drive train problems and ways to detect and maintain them
27-28	Hydraulic drive group (types), how it works, hydraulic drive group problems, and methods of detecting and maintaining them
29-30	Types of springs (leaf and spiral), columns that deter shocks, problems with springs, and methods of detecting and maintaining them.

Course Description Form

1. Course Name cars Electricity (2)

2. Course Code: : C2

3. Semester / Year: The second is an annual course

4. Description Preparation Date:15\2\2024

5. Available Attendance Forms: Theoretical and practical study

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

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

Name: Inas Jabbar Mohammed
Email: inasalrubaiy1973@gmail.com

8. Course Objectives

Course Objectives	Teaching the student the basic concepts of car electricals

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=1 Practical=2	Teaching the	Charging circuit	Lectures and practical training	Oral exams And practical

		student the basic concepts of car electrica			Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Automotive Electrical Systematic Book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
2-1	Charging circuit (direct current, generator, regulator), parts of the generator and its working principle
3	Maintaining the generator and diagnosing its faults (DC) using a special testing device
4	The direct current regulator, its parts, its operation, and diagnosing its malfunctions
5	Alternating current (AC) generator, its parts, and its operation
6	Malfunctions in the charging circuit of the alternating current generator, methods of diagnosing and repairing them, and explaining the differences between direct and alternating current generators.
7	Alternating current regulator and its different types
8	Winding wires for the armature
9-10	Regular ignition system (battery - main switch - ignition coil - spark distributor - spark plugs - connection wires)
11-12	Service and maintenance of the ignition system (checking the ignition coil - condenser - spark distributor - adjusting the ignition)
13	Use an oscilloscope to check the ignition system
14	Testing device (current and voltage regulator)
15	Using a modern electrical device to check the validity of the dispenser (Distributor tester).
16	Use of the modern spark timing device, its applications and spark tuning
17	Using an infra-red exhaust emission tester to analyze the exhaust, determine the validity of spark plugs, and find system faults.

18-19	Electronic ignition system
20	Lighting system (side, main and interior)
21	Side signal cutting device - electronic lighting clip - windshield wiper device - electric fuel pump
22	Malfunctions of the front, rear, and side lighting system and interior lights
23-24	Auxiliary electrical devices in the car (fuel gauge - oil pressure gauge - temperature gauge - charging current gauge)
25-26	Secondary electrical circuits in the car (alarm circuits - side and quad signal circuits - windshield wiper circuits - radio tape recorder circuits)
27	The electrical circuit to control car doors and windows
28	Car air conditioning and heating devices (electrical system)
29	Car alarm and electronic control system
30	Using an oscilloscope to check the operation of a car's engine with a screen and its electrical system, and using a calculator for the test.

Course Description Form

1. Course Name Industrial management

2. Course Code: : I.M

3. Semester / Year: The second is an annual course

4. Description Preparation Date:15\2\2024

5. Available Attendance Forms: Theoretical study

6. Number of Credit Hours (Total) / Number of Units (Total):   60

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

Name: Raed Salman Saeed
Email: raed.saeed@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the student the basic concepts of management, power stations, and the study and management of projects

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in the attach	theoretical=2	Teaching the student the basic concepts of management power stations, and the study and management of projects	Strategic Management	Lectures and practical training	Oral exams And practical Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Industrial management book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
1-2	Strategic Planning
3-4	Strategic Management
5-6	Total Quality Management
7-8	Supply Chain Management
9-10	Project Management

11-12	Productivity and Process Improvement
13-14	Quality Management and Quality Assurance
15-16	Statistics and Mathematics in Management
17-18	Enterprise Resource Planning
19-20	Decision Analysis
21-22	Risk Management
23-24	Innovation and Change Management
25-26	Information Technology in Industrial Management
27-28	Industrial Economics and Finance
29-30	Occupational Health and Safety in the Industrial Environment

Course Description Form

1. Course Name Car body

2. Course Code: :c b

3. Semester / Year: The second is an annual course

4. Description Preparation Date:15\2\2024

5. Available Attendance Forms: Theoretical and partial study

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

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

Name: Ahmed Hadi Hatif
Email: ahmed.shuber@gmail.com

8. Course Objectives

Course Objectives	Teaching the student the basic concepts of mechanical work, material properties, and problem solving

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy

	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 partial =2	Learn about the different designs of car bodies and structures	Car body and cha manufacturing	Lectures and practical training	Oral exams And practical Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Car parts book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

details Vocabulary	week the
overview of the development of the automobile industry An	1
overview of the manufacture of the car body and structure, building the body An and learning about the different designs of car bodies and bodies.	2
materials used in the manufacture of the car body and body, ferrous Engineering (materials, non-ferrous materials (types and specifications	4-3
of engineering materials (physical properties, mechanical properties Properties, (brittleness, mechanical tests	5
and simple emotion Stress	6
or vertical stress, direct strain Direct	7

details Vocabulary	week the
materials - Hooke's law Elastic	8
of elasticity - Young's modulus Modulus	9
(test (stress-strain diagram Tensile	10
simple transformation problems Relatively	11
welding , arc initiation and arc re-initiation Arc	12
resistance welding - spot welding Electrical	13
welding - heating sources - oxy equipment Acetylene - Oxy torch Acetylene - Gas of torches Types	15-14
with rivets, types of fastening (combinations, combinations), finding the Fastening tensile force in the rivet, solved problems	16
(between welding and riveting (advantages and disadvantages Comparison	17
the advantages of robot over humans and its various uses in the automobile , Robot industry	19-18
cold forging and forging processes , types, hot forging and forging ,Forming processes, types	21-20
the designs of the vehicle structure Study	22
and the effect of weather and other factors on the car body Corrosion	23
,the car, preparing the body and parts to be painted, and cleaning them Painting .corroded and damaged parts removing include	24
basic dye, putty and polishing works ,Phosphorescent	25
dyes , their types, methods of mixing colors, matching colors (according to Basic (the tables	26
method in production laboratories Dyeing	27
polishing and finishing operations Final	28
problems , their diagnosis, treatment methods, and causes Paint	29
glass , types, repairs and installation of front, rear and side glass Auto	30

Course Description Form

1. Course Name: computer applications
2. Course Code: :CA
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and partial study
6. Number of Credit Hours (Total) / Number of Units (Total):   90

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

Name: Ahmed Hadi Hatif
Email: ahmed.shuber@gmail.com

8. Course Objectives

Course Objectives	**Teaching the student the basic concepts of the Internet, Excel, and AutoCAD**

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=1 partical=2	Teaching the student basic concepts of Internet, Excel, AutoCAD	The concept of networks and its types - the concept of the Internet	Lectures and practical training	Oral exams And practical Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Car parts book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific	Reports

journals, reports…)	
Electronic References, Websites	Internet

details Vocabulary	week the
The concept of networks and its types - the concept of the Internet -its operation - description of the home screen and its components - how to connect to the World Wide Web) Web - (benefiting from the famous search engines Yahoo , Goggle – Learn about ways to search for and access information	3-2-1
Excel program : Learn about the concept of the program: its benefits, specifications, features, and ways to operate it, and learn about the main screen and its components, and how it contains various effective menus and tools. The concept of the cell, basic data types and how to enter them How to Save Workbook , Worksheet Close the program and close the file Open the saved file, enter data, perform simple calculations, and learn how to adjust or format and structure data within a single cell or group of cells. Learn about ways to collect data or groups of cells in their different forms, as well as how to sort data Use some of the functions provided by the program such as ,Sum, Min, Max < count, SQRT, Average and other useful related statistical functions Learn about the editing process provided by the program, how to copy data or move data, and learn about the concept of copying mathematical operations, as well as the concept of relative cells and absolute cells . Control cell width : Change its style and format by using the formatting tools Dealing with charts and how to convert digital and textual data into charts of various types through the Chart Wizard command and learning how to make the modifications and revisions provided by the program. Learn how to add or delete rows or columns on a work page and how to print digital data or charts	10-9-8-7-6-5-4
Auto CAD damage recognition program - Arc) – Absolute –Relative – Polar (line Multiline – line – point – circle depends on the different working environment of the screen Menus –Screen –Scroll Bars –Tool Bars – Properties	11
Prepare a drawing sheet - Open a new file -Limits – Drawing units – Grid _ - Jump , Snap ,Save as , Save	12
Learn about chart drawing commands	15-14-13
Learn about editing commands Mirror - Move - Copy – Offset	18-17-16
Osnap drawing Fine	19
dimensions Add	20
Hatch and sectors text Add	21
Layer - Properties - linetypes - drawing specifications Control	22
and Attributes Blocks	23
Measure – Block – wblock – explode – divide	24
Ucs - Vports - Elev-thickness to 3D drawing Introduction	26-25
surfaces D3 Create	28-27
solids D3 Create	30 - 29

Course Description Form

1.Course Name: Baath crimes

2.Course Code: : в c

3.Semester / Year: The first class course

4.Description Preparation Date:15\2\2024

5.Available Attendance Forms: theoretical study

6.Number of Credit Hours (Total) / Number of Units (Total):   60

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

Name: Assad Dakel Hadi
Email: assad.hadi@atu.edu.iq

8.Course Objectives

Course Objectives	It is to shed light for the generations born after the fall the regime on the many crimes committed by the Baat Party regime and Saddam Hussein against the Iraqi people. These crimes were diverse, including war crim crimes against humanity, genocide, and economic crim

9.Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=2	Learn about crimes committed by former regime	Baath crimes	Lectures and practical training	Oral exams And practical training

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)	Baath crimes book
Main references (sources)	Methodical books
Recommended books and references (scien journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
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: English language
2.Course Code: : E L
3.Semester / Year: The first class course
3.Description Preparation Date:15\2\2024

4.Available Attendance Forms: theoretical study
5.Number of Credit Hours (Total) / Number of Units (Total):   30
6.Course administrator's name (mention all, if more than one name)
Name: Alaa Hussein Majeed Email: alaa.majeed.bib23@atu.edu.iq

7.Course Objectives

Course Objectives	To provide the students with basic skills in both general a scientific English Language

8.Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

9.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=1	To provide students with basic skills in both general and scientific English Language	English language.	Lectures and practical training	Oral exams And practical training

10.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

11.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Technical English book project
Main references (sources)	Methodical books
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Topics
1-4	Unit -1- Introduction and Review to English language. Introduction to parts of speech. Sentence Patterns.
5-6	Unit -2- Reading Comprehension and structure (selected scientific passages general to all specializations)
7-8	Scientific Attitude (Simple present)
9-10	Mathematics(passive)
11-12	Scientific Methods (simple past)
13	Test
14-15	Unit -4- Conversation (from daily life Meeting people
16-17	Talking about your job
18-19	Unit -5- The use of library, Dictionary, and Internet.
20-21	Unit -6- Translation Selected topics from internet to be translated.
22-25	Unit -7- Writing Technical Reports
25-29	Unit -8- Terminology Selected Passages according to specializations
30	Final Test

Course Description Form

1..Course Name: The project
2.Course Code: P
3.Semester / Year: The second class annual course
4.Description Preparation Date:15\2\2024
5.Available Attendance Forms: theoretical study
6.Number of Credit Hours (Total) / Number of Units (Total):   60
7.Course administrator's name (mention all, if more than one name)
Name: Alaa Hussein Majeed Email: alaa.majeed.bib23@atu.edu.iq Name: Raed Salman Saeed Email: raed.saeed@atu.edu.iq Name: Asraa Adnan Nagem Email: asraa@atu.edu.iq
8.Course Objectives

Course Objectives	The course works to provide the student with practical sk... and abilities by adopting the idea of repairing or building refrigeration device Integrated while transferring the theoretical and applied information he studied into a tangible practical reality

9.Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy

4- E-learning strategy
5- E-learning strategy

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=2			Lectures and practical training	Oral exams And practical training

10.Course Evaluation

The degree is distributed
1-70 marks for the discussion committee's evaluation
2-30 arks for the competent supervisor's evaluation

11.Learning and Teaching Resources

Required textbooks (curricular books, if any)	According to the project topic
Main references (sources)	Methodical books
Recommended books and references (scientific journals, reports…)	Report
Electronic References, Websites	Internet

	Item
	Student projects are distributed to branch students by the branch or department and under the supervision of a professor, so that the projects include one of the following aspects: 1- Making integrated maps for a refrigeration or air conditioning device, within the specialized devices, and manufacturing parts or assembling the devices or accessories, and carrying out the necessary checks and tests on it after that. 2- The process of calculating the air conditioning loads for any public building and drawing the necessary diagrams and maps for all air ducts and water transmission pipes, as well as illustrations of

	the required accessories, installing the pipes and devices, the sequence of control devices, and testing the devices.

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
the first	Sp	Spinning technique)	Basic	*				*				*			
the first	TF	Textile fibres	Basic	*				*				*			
				*				*				*			
the Second	TS	Textile structures	Basic	*				*				*			
the first	MA	mathematics	Assistant	*				*				*			
the first	CA	Computer applications	Assistant	*				*				*			
the first	ML	Mechanics lab	Basic	*				*				*			
the first	ED	Engineering Drawing	Basic	*				*				*			
the first	RD	Rights and democracy	Assistant	*				*				*			
			Basic	*				*				*			

The second	TM	Techniques and maintenance of textile machines	Basic	*				*			*			
The second	KT	Knitting technique	Basic	*				*			*			
The second	QC	Quality control	Basic	*				*			*			
The second	ET	Electrical technology	Basic	*				*			*			
The second	IM	Industrial management	Assistant	*				*			*			
The second	ID	Industrial drawing	Assistant	*				*			*			
The second	CA	Computer applications	Assistant											
The second	P	project	Basic	*				*			*			
The first	EL	English language	Assistant	*				*			*			
The first	BC	Baath crimes	Assistant	*				*			*			

Course Description Form

1. Course Name :Spinning technology

2. Course Code: S.T

3. Semester / Year: The first is an annual course

4. Description Preparation Date:15\2\2024

5. Available Attendance Forms: Theoretical and practical study

6. Number of Credit Hours (Total) / Number of Units (Total):   180

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

Name: Ansam Ali Hashim
Email: ansamly2@atu.edu.iq

8. Course Objectives

Course Objectives	**Learn about the technology of converting textile fibers into yarn and learn about the machines**

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=3 Practical=3	technology converting textile fibers	Properties of textile materials	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Spinning technique book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
1	Properties of textile materials needed to be suitable for spinning and weaving
2	Cotton ginning - its definition - its purpose - types of machines - cylindrical ginning - saw ginning - the effect of the ginning process on the mechanical properties of cotton
3	Mixing and brightening cotton - its purpose - machines - mixing calculations - mixing methods - manual method - mechanical method - modern methods - comparison between different types
4	Finding the average unit price of a mixture of different cottons with sim prices - applied examples
5	Types of rackets - their definition - use - comparison between different type
6	The carding process - its definition - its purpose - explanation of the path the hairs in it - the forces affecting the hairs - calculations

7	Calculations of mechanical drag and real drag - comparing them - calculat total drag - determining exhaust rates - calculating productivity
8	The withdrawal process - its definition - its purpose - the theory of withdraw -
9	Calculating the different speeds of the drawing machine - modern draw methods - drawing calculations - productivity
10	The carding process - its definition - its purpose - features - determinants - the relationship of carding to the type of thread - carding theory
11	Carding preparations - their purpose - stages of preparation - tape wind machine - its calculations - tape assembly and its calculations
12	Calculating the exhaust ratio - Types of carding according to the exhaust r: - Drag and coil weight calculations, output and productivity
13	Calculations of the number of ribbons and yarn - their types - the di method - the indirect method - the number of cotton yarn - the number threads for different yarns
14	Tiger calculations for different threads - applied examples
15	Additional examples of tigress
16	The twisting process - its definition - its purpose - explanation of the twist theory
17	A detailed explanation of the twist - calculations - the number of twists in : - the number of twists in a meter - the relationship of the twist factor to number - production calculations
18	The spinning process - definition - its purpose - spinning methods - spinning in the s direction and in the z direction
19	The ring spinning method - its definition - its advantages – its disadvantages - speed and production calculations - cape spinning - its definition - its advantages - its disadvantages
20	Flyer spinning method - definition - parts - advantages and disadvantages and production calculations
21	Open End Spinning-Definition-Detailed Explanation- Advantages and Disadvantages
22	Speed and production calculations for the open-end machine
23	Thread duplication - definition - purpose - theory and calculations

24	Wool spinning - preparation stages - washing - drying – removing suspended plant materials - mixing wool
25	A general introduction to wool fibers - wool tops and their features - methods of production
26	Production of wool yarn - the English method - the French method - the conical drawing method
27	Anglo drawing method - wool spinning machines - their purpose - main parts
28	Flyer spinning for wool. A detailed explanation of the machine and its calculations – Sulfameol
29	spinning machine Advantages and disadvantages of the sulfamyl machine - the cape machine for wool spinning - its parts, advantages and disadvantages
30	A detailed explanation of the cap machine, its parts, calculations, advantages and disadvantages

Course Description Form

1. Course Name   :Textile fibres
2. Course Code: T.F
3. Semester / Year: The first is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   120

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

Name: Asraa Adnan Nagem
Email: asraa@atu.edu.iq

8. Course Objectives

Course Objectives	Course objectives: Teach the student about textile fibers, examinations and uses

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=2	Teach the student About textile fibers, examinations uses	Natural fibres-cellulose fibres-cotton and their properties-ranks of cotton fil	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Textile fibers book
Main references (sources)	Currently available methodical book

Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Experimental terms	Theoretical Terms	Week
Definition of agent components –general aspect-agent components classification	Definition the fibres –basic properties that mast be available in textile fibres –general clasiiification	1
Inspection of cotton fibres	Natural fibres-cellulose fibres-cotton and their properties-ranks of cotton fibres	2
Treating the cotton fibres by oxidizing in cold and hot state and study the effects of them on fibres	Properties of cotton fibres	3
Treating the cotton fibres by acids in cold and hot state and study the effects of them on fibres	Microscopic properties-producing countries	4
Microscopic study for fibre testing – effect offec of acids and bases on jute fibres	Jute fibres –properties –microscopic structure-uses	5
Effect of acids on linen fibres	Linen fibres –description –retting operation and their types –uses	6
Treating the linen fibres by caustic in cold and hot state and study the effects of them on fibres	Physical and chemical properties of linen	7
Microscopic structure of linen and sisal	Sisal fibres –composition-properties-uses	8
Sorting of animal fibres methods	Animal fibres	9
Microscopic structure	Wool fibres –ranks-properties	10
Chlorination of wool	Chemical composition of wool	11
Testing the natural properties of wool	Natural properties of fibres	12
Study the effect of temp. and moisture on wool fibres	Factors which effect on wool properties	13
Effect of acids and alkali on wool fibres	Effect of alkalis , acids,salts,oxidizing and formaldyhide on wool fibres	14
Microscopic structure of silk and mohair	Mohair fibres-cashmere fibres –alpaca fibres-silk fibres	15
Study the physical properties of asbestos	Mineral fibres –asbestos fibres-properties-uses	16
Definition of man made fibres	Man made fibres –dicovering of them-general classification	17
Using combing method to determine the effective length of fibres	Regenerated fibrs in detail study –viscose rayon	18
Treating the linen fibres byacid in cold and hot state and study the effects of them	Acetate fibres –their properties	19

on fibres		
Treating the jute fibres by acids in cold and hot state and study the effects of them on fibres	Production method of viscose rayon – Tobham method-Bobbin spinning method-continuous method	**20**
Treating the wool fibres by acids in cold and hot state and study the effects of them on fibres	Synthetic fibres –poly amide acrylic-production process	**21**
Treating the wool fibres by alkalis in cold and hot state and study the effects of them on fibres	Poly ester fibres-composition elements-preparation for spinning	**22**
Treating the natural silk fibres by alkalis in cold and hot state and study the effects of them on fibres	Polyethelene fibres –poly vinyl fibres	**23**
Study the physical properties of some man madse fibres	Glass fibres-composition-production-their properties-uses	**24**
Study the microscopic properties of glass fibres	Fibro fibres-fortyson fibres-composition-properties	**25**
Poly amide testing in microscope-treating them in acids	Acetate rayon-composition-production method	**26**
Microscopic test of poly acrylic	Properties of acetate fibres	**27**
Treating poly acrylic by alkalis	Fibres blending (mixing)-purpose-polyester with natural fibres	**28**
Using projector device for testing man made fibres	Acrylic with wool mixing-acrylic with cotton	**29**
Using tensile test device- maintenance and perpetuation of devises	Poly amide with polyester-poly amide with wool	**30**

Course Description Form

1. Course Name   :Textile structures
2. Course Code: T.S
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024

5. Available Attendance Forms: Theoretical and practical study

6. Number of Credit Hours (Total) / Number of Units (Total):   150

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

Name: Asraa Adnan Nagem
Email: asraa@atu.edu.iq

8. Course Objectives

Course Objectives	Teach the student how to prepare histological structures

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=3	Teach the student how prepare histolog structures	Classification of woven fabrics	Lectures and practical train	Oral exams And practical Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Textile fibers book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Experimental terms	Theoretical Terms	Week
Classification of woven fabrics	Classification of woven fabrics	1
Made warp beam to product a plain 1/1	Standard weaves-plain weaves-drawing repeat derivative –types	2
Made warp beam to product a plain 2/2 warp rib	Effect of color (plain in warp and weft)and in both direction	3
Made warp beam to product a plain 1/1 weft rib	Twill weaves –how to draw-repeat-types-extension	4
Made warp beam to product a plain 2/2 in both direction	Angles of twill weaves	5
Effect of color for plain weaves	Non-standard twill shades-broken-compound-mixed and cork screw twill	6
Made warp beam to product a twill weave 2/2warp rib (regular)	Effect of color in warp and weft .	7
Made warp beam to product a twill weaves 2/2 warp rib(irregular)	Sateen weaves-how to draw—repeat-types	8
Made warp beam beam to product broken twill weave 2/2 weave 2/2 warp rib	Drawing in types –harness	9
Effect of color for twill weaves	Honeycomb weaves –how to draw-repeat types	10
Made warp beam to product regular sateen	Figuring with extra threads (weft) one color	11
Made warp beam to product irregular sateen	Traditional weft figuring one and two colors	12
Made warp beam to product extra weft figuring by one color	Extra warp figuring one and two colors	13
Made warp beam to product extra weft figuring by one color	Traditional warp figuring one and two color	14
Made warp beam to product extra weft figuring by two color	Packed clothes –weft packed clothes	15
Made warp beam to product extra weft figuring by two color	Packed clothes –warp packed clothes	16

Made warp beam to product warp packed clothes	Bad ford cords from weft by warp direction	17
Made warp beam to product warp packed clothes	Bolymita weaves by one color in face	18
Made warp beam to product bad ford cord weaves (warp)	Bolymita weaves by two color in face	19
Made warp beam to product bad ford cord weaves (weft)	Pile fabrics in warp and weft pile fabrics	20
Made warp beam to product honeycomb weave (weft)	Multi layer fabrics –double cloth when use plain 2/2	21
Made warp beam to product honeycomb weave (warp)	Multi layer fabrics –double cloth when use plain 2/2	22
Made warp beam to product multi layer weaves from plain 1/1	Multi layer fabrics –double cloth when use plain 1/1	23
Made warp beam to product multi layer weaves from plain 2/2	Gauze weaves types	24
Analysis of regular plain weaves	Straight gauze and reversed gauze	25
Analysis of irregular plain weaves	Mock leno weaves perforated fabrics	26
Analysis of regular twill weave	Analysis of textile plain	27
Analysis of irregular twill weaves	Analysis of textile twill	28
Analysis of regular sateen weave	Analysis of textile sateen	29
Analysis of irregular sateen weave	Analysis of textile (review)	30

Course Description Form

1. Course Name   :Techniques and maintenance of textile machines
2. Course Code: T.M
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study

6. Number of Credit Hours (Total) / Number of Units (Total):   210

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

Name: Zena Salah Hassan
Email: zena@atu.edu.iq

8. Course Objectives

Course Objectives	**Teaching the student about the parts of textile machines, the preparations, production calculations, and maintenance of the machines**

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=3 Practical=4	Teaching the student about the parts of textile machines, their preparations, production calculations, and maintenance of the machines	A general diagram the weaving stages	Lectures and practical training	Oral exams And practical Training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Machine maintenance book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
1	A general diagram of the weaving stages and an explanation of the thread numbering system
2	Angled threads with examples, applications, and numbering of angled threads
3	Information on the stages of preparation - warp thread preparations
4	Recycling stage and productivity calculations
5	Direct and indirect blocking - types of holders - main parts of the blocking machine
6	Production calculations and creating examples and applications for production processes related to the payment stage
7	Installation and machine parts
8	Production calculations and creating examples and applications of production processes
9	Growing mixtures and determining proportions
10	Examples of making mixtures - Calculations of the effect of starching on the properties of yarns and fabrics
11	Throwing and throwing - equipment for throwing and throwing - types of throwing and combing equipment
12	Weft recycling - pipe recycling machines Production calculations - applied examples of weft turning
13	Textile - its definition - general information about it - division of textile machines - main and secondary parts
14	Types of textile machines - advantages and disadvantages of each type
15	Some calculations related to fabric and production efficiency - mathematical examples of production and weights
16	Calculating the machine's production in linear meters - applied examples of calculating weights
17	Calculating the coverage factor - the diameter of the thread depending on its number
18	The psyche - internal and external cams - applied examples of - the theory of organizing external cams based on the tissue structure
19	Dobby - its types - How to perform some textile structures on the dobby machine
20	Ajacard - its types and how to implement some textile structures on it - its energy - types of lattices
21	How to make some engravings on the jacquard machine

22	Extrusion devices - their types - the shuttle - its definition - identifying single-shuttle and multi-shuttle machines
23	Calculating the coverage factor - the diameter of the thread depending on its number
24	The psyche - internal and external cams - applied examples of - the theory of organizing external cams based on the tissue structure
25	Dobby - its types - How to perform some textile structures on the dobby machine
26	Ajacard - its types and how to implement some textile structures on it - its energy - types of lattices
27	How to make some engravings on the jacquard machine
28	Extrusion devices - their types - the shuttle - its definition - identifying single-shuttle and multi-shuttle machines
29	The psyche - internal and external cams - applied examples of - the theory of organizing external cams based on the tissue structure
30	Ajacard - its types and how to implement some textile structures on it - its energy - types of lattices

Course Description Form

1. Course Name   :Knitting technique

2. Course Code: k.M

3. Semester / Year: The second is an annual course

4. Description Preparation Date:15\2\2024

5. Available Attendance Forms: Theoretical and practical study

6. Number of Credit Hours (Total) / Number of Units (Total):   210

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

Name: Asraa Adnan Nagem
Email: asraa@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the student the parts of knitting machines, their production calculations, and maintenance of the machines

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=3 Practical=4	Teaching the student parts of knitting machines, their production calculations, maintenance of the machines	knitting machines	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Machine maintenance book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

week	Item
1	Introduction to the topic of knitting and the reasons for its spread
2	Comparison between woven fabrics and knitted fabrics
3	Study of the main devices in knitting machines (weft knitting) - Study of the types of needles used in knitting machines - their advantages and disadvantages with drawing
4	Study of the types of platinum and the types of cams used
5	How to form a knot on hooked needles with a drawing
6	Study of feeding devices for knot formation systems, along with study of tension calculations in yarns according to inactive and active
7	Study of drawing devices in knitting machines and their relationship to fabric specifications
8	Classification of types of machines according to the fabrics produced
9	Classification of machines according to construction and design
10	Identify the types of weft knitting stitches (plain, hem, straight, crossed, and shifted)
11	Studying the properties of plain and hemmed fabrics and comparing the two types
12	Study of derivative and double compositions and the characteristics of these fabrics
13	Studying the types of warp knitting stitches and learning how to represent these stitches in analytical drawings and diagrams
14	Practical examples of analytical drawing and schematic drawing
15	Study of the main devices in the circular knitting machine, along with a schematic diagram of the machine in general
16	Calculating the productivity of the circular machine with schematic examples
17	Study of the main devices in the surface knitting machine with a diagram of the machine in general
18	Calculating the productivity of a surface knitting machine with applied examples
19	Study how knots are formed in the derby machine with a diagram of the machine
20	Study of the zip lock machine and how to make knots on it
21	Study of parts for a textile knitting machine
22	A study of the productivity of a textile knitting machine with

23	applied examples Studying the foundations upon which quality estimation in woven fabrics depends
24	Study of defects in woven fabrics in general
25	Study of defects in knitted fabrics in circular knitting machines and sock machines
26	Study of defects in woven fabrics in textile knitting machines
27	Types of threads used in the knitting industry in general
28	The effect of yarn types on the final product
29	Calculate the knot length
30	Identify the types of oils and greases used to maintain sewing machines

Course Description Form

1. Course Name: Mathematics
2. Course Code: : M
3. Semester / Year: The first is an annual course
4. Description Preparation Date: 15\2\2024
5. Available Attendance Forms: Theoretical study
6. Number of Credit Hours (Total) / Number of Units (Total):   60
7. Course administrator's name (mention all, if more than one name)
Name: Dalael Saad Abdul-Zahra Email: dalael.abdulzahra.iba5@atu.edu.iq
8. Course Objectives

Course Objectives	Teaching the student, a number of topics, such as matrices, determinants, functions, differentiation and integration, and

	statistics.

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	theoretical=2	The student learns about matrices	Matrices, determinants, and their properties	Lectures	Homework's assignments, and written examinations
2	theoretical=2	The student learns about linear equations	Solving linear equations Linear equations, Cramer's method, applications, arc analys vectors	Lectures	Homework's assignments, and written examinations
3	theoretical=2	The student learns about Vectors	Vectors, analysis of limits, types vectors, quantities, standard vectors, curve algebra, vector arithmetic operations	Lectures	Homework's assignments, and written examinations
4	theoretical=2	The student learns About operations on Vectors	Unit orthogonal vectors, vect scaling, scalar and cross product, applications to vect arc moment analysis	Lectures	Homework's assignments, and written examinations
5	theoretical=2	The student learns About logarithms	Logarithm, definition of logarithm, laws of logarithm and how to use them, solving logarithmic equations	Lectures	Homework's assignments, and written examinations
6	theoretical=2	The student learns About trigonometric Functions	Trigonometric ratios and the relationship between them, some laws in trigonometric ratios, the function, the mear of the function, the independ and dependent variables, the function	Lectures	Homework's assignments, and written examinations
7	theoretical=2	The student learns About algebraic functions,	Measurements, purpose of trigonometric and algebraic functions, applications of line velocity, areas	Lectures	Homework's assignments, and written examinations

8	theoretical=2	The student learns Derivative's	Details, derivative, derivative algebraic functions, application the implicit function chain rule	Lectures	Homework's assignments, and written examinations
9	theoretical=2	The student learns Derivative's	Higher order derivative, derivative of the exponential function, derivative of the logarithmic function	Lectures	Homework's assignments, and written examinations
10	theoretical=2	The student learns Derivative's	Derivative of trigonometric functions, derivative of circu functions	Lectures	Homework's assignments, and written examinations
11	theoretical=2	The student learns Partial Derivative's	Partial differentiation	Lectures	Homework's assignments, and written examinations
12	theoretical=2	The student learns Applications on Derivative's	Applications on the derivativ (slope equation, perpendicul velocity and acceleration)	Lectures	Homework's assignments, and written examinations
13	theoretical=2	The student learns Applications on Derivative's	Derivative applications (instantaneous change)	Lectures	Homework's assignments, and written examinations
14	theoretical=2	The student learns Applications on Derivative's	Increasing, decreasing, maximum and minimum lim inflection points, graphing th function	Lectures	Homework's assignments, and written examinations
15	theoretical=2	The student learns integration	Integration, indefinite integration, integration of algebraic functions	Lectures	Homework's assignments, and written examinations
16	theoretical=2	The student learns exponential and logarith functions	Integration of exponential logarithmic functions	Lectures	Homework's assignments, and written examinations
17	theoretical=2	The student learns integration	Integration of trigonometric functions	Lectures	Homework's assignments, and written examinations
18	theoretical=2	The student learns integration	Definite integral, application (distance under the curve, distance between the curve)	Lectures	Homework's assignments, and written examinations
19	theoretical=2	The student learns The rotational magnitudes	The rotational magnitudes a arc length of the curve	Lectures	Homework's assignments, and written examinations
20	theoretical=2	The student learns Approximation	Approximation in integratior (trapezoid rule, Simpson's ru	Lectures	Homework's assignments, and written examinations
21	theoretical=2	The student learns Integration	Integration methods, retail integration	Lectures	Homework's assignments, and written examinations
22	theoretical=2	The student learns Integration	Integration by compensation method	Lectures	Homework's assignments, and written examinations
23	theoretical=2	The student learns Integration	Integration by partial fractio method for the first	Lectures	Homework's assignments, and written examinations
24	theoretical=2	The student learns	Solving differential equati	Lectures	Homework's

		Solving differential equations of the first order, i.e., discrete homogeneous	of the first order, i.e., discr homogeneous		assignments, and written examinations
25	theoretical=2	The student learns Differential equations	Differential equations - line applications	Lectures	Homework's assignments, and written examinations
26	theoretical=2	The student learns On C.N	Complex numbers - addition subtraction - division - multiplication	Lectures	Homework's assignments, and written examinations
27	theoretical=2	The student learns Applied formula	Applied formula: Converting carpentered characteristic to linear and vice versa	Lectures	Homework's assignments, and written examinations
28	theoretical=2	The student learns On Statistical	Statistical operations, freque distributions, histograms, frequency curve	Lectures	Homework's assignments, and written examinations
29	theoretical=2	The student learns On Statistical operations	Statistical operations, freque distributions, histograms, an frequency curve	Lectures	Homework's assignments, and written examinations
30	theoretical=2	The student learns On Statistical operations	Mean, range, standard deviation, variance	Lectures	Homework's assignments, and written examinations

11. Course Evaluation

The degree is distributed
  1- 10 marks for the first theoretical semester and 10 marks for practical.
  2- 10 marks for the second semester, theoretical + 10 marks 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
Main references (sources)	Calculus Analysis Geometry, Thomas
Recommended books and references (scientific journals, reports…)	Scientific research in the specialty
Electronic References, Websites	Internet

Course Description Form

1. Course Name: Electrical Technology

2. Course Code: E.T

3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   90
7. Course administrator's name (mention all, if more than one name)
Name: INAS JABBAR MOHAMMED Email: inasalrubaiy1973@gmail.com

8. Course Objectives

Course Objectives	Teaching the student the principles of electricity

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=1 Practical=2	Teaching the student the principles of electricity	Ohm's law	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

The degree is distributed
 1- 10 marks for the first theoretical semester and 10 marks for practical.

2- 10 marks for the second semester, theoretical + 10 marks for practical
3 - 10 marks for student activities
4 - 50 marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electrical technology book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

week	Item
1	Electrical units and symbols - components of a simple electrical circuit - Ohm's law
2	Connecting resistors in series and parallel - Kirchhoff's laws and their applications
3	Single-phase alternating current - its generation, properties and uses.
4	Definition of sine wave - waveform with frequency – value
5	The effective value of the current and voltage - a comparison between three-phase alternating current and its generation - the phases and their sequence
6	Phase angle – representing phases with rotating vectors
7	Principles of electromagnetism - definition of magnetic field - lines of force
8	Flux and flux density - magnetic field intensity - magnetic effect of electric current - applied issues
9	Mutual self-inductance - Henry - Effect of inductance on the sine wave with phase difference calculations - Comparison between electric and magnetic circuits.
10	Capacitance - Farad - The effect of capacitance on the sine wave with voltage difference calculations
11	Transformers - their types - their working principle - lift transformers
12	Conservation and isolation transformers - transformer capacity and capacity estimation
13	Three-phase induction motors - their types and working principle
14	Engine speed and ways to improve it
15	Connecting motors - delta connection - star connection
16	Line current in delta and star - the use of star and delta in practical life - speed and voltage in both cases
17	Single-phase alternating current motors - working theory and types
18	Condenser motor - single-phase motor, working theory and types
19	Motor protection - fuses and their types - protection against overload
20	Protection against high temperature - thermal cutter - magnetic pick-up cutter
21	How to identify faults in engines and how to fix them - the engine does not rotate

22	The engine is running at a slower than normal speed - The engine temperature rises while it is running - Dealing with noise in the engines
23	Electrical switches, their types and their work
24	Microswitch - types of connections to the contact points
25	Inductance devices, their types and their working principle
26	Time tracker - how it works and how to adjust it
27	Photocell and its types
28	The principle of cell operation and its applications
29	Al-Muwahid - its composition - the principle of its work
30	Principle of work of unifieds

Course Description Form

1. Course Name:Quality control
2. Course Code: Q.C
3. Semester / Year: The second is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   90
7. Course administrator's name (mention all, if more than one name)
Name: Ansam Ali Hashim Email: ansamly2@atu.edu.iq
8. Course Objectives

Course Objectives	Teach the student the principles of quality control

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=1 Practical=3	Teach the student the princi of quality control	[1] control charts and their uses - specification limits	Lectures and practical training	Oral exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Quality control book and booklets
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

week	Item
1	-Statistics - its relationship to spinning - calculating the rate - repetition - drawing curves
2	Measures of dispersion - standard deviation - uses of standard deviation
3	control charts and their uses - specification limits
4	Types of maps - average-range - defect analysis
5	Sampling theory - the importance of quality control in industry

6	Defects in lightening - carding - drawing machines and how to identify them
7	Identifying defects in twisting, carding and final spinning machines
8	Tests of thread number and filament length rate
9	Thread twisting tests
10	Thread elongation and regularity tests
11	The relationship between thread strength and shawl strength
12	Physical specifications of the thread
13	The relationship between tano and elongation of different yarns (artificial natural)
14	Phenotypic examination of filaments using simple methods
15	Calculating the percentage of knots in the threads
17-18	A detailed explanation of the Aleustar device, its uses and benefits
19	Fabric tests - dimensional shrinkage - effect of moisture
20	Fabric durability - measuring it
21	The ability of the fabric to resist external conditions
22	The ability of the fabric to resist abrasion by friction
23	Carpet test - thickness measurement-
24	Experiments conducted on carpets, such as friction after periods of time
26	Continuation of week 25
27	Studying the effect of treating fabric with different materials
28	Examining fabric compositions and their relationship to machines
29	Longitudinal and transverse defects in the fabric
30	The relationship of the control department with the rest of the departments

Course Description Form

1. Course Name: Applications Of Computer
2. Course Code: : A.C
3. Semester / Year: The first is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   90

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

Name: Alaa Hussein Majeed
Email: alaa.majeed.bib23@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the students about the computer and some applications.

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1:	theoretical=1 Practical=2	Data show, Computer Machine, Screen Show	Computer Definition, Software, Hardware, Computer Genertions.	Lectures and practical training	Written exams And practical training
Week2:	theoretical =1 Practical=2	Computer Mechine, Ms-Dos system	MS-DOS Operating System, Definition, Internal commands, External commands	Lectures and practical training	Written exams And practical training
Week3-12:	theoretical =1	Computer Mechine, MS-DOS System	Internal commands: D Del , Time , Date , Cls , CD, MD, Echo, Prompt Ren < copy , vol, ver ,	Lectures and practical training	Written exams And practical training

			path . External Commands: Edit , tree , xcopy , format , chkds diskcopy		
Week13-27	theoretical =1 Practical=2	Computer Mechine, Windows System	Operating System Windows: Disktop, Icons, Taskbar, Start, Shutdown, My computer, Control Panel, Windows media playe Calculator, Paint, Note Pad, Help	Lectures and practical trainin	Written exams And practical training
Week28-30	theoretical=1 Practical=2	Computer Mechine, Screen Show.	Computer Viruses, Antivirus.	Lectures and practical trainin	Written exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer and its Applications
Main references (sources)	Currently available methical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Vocabulary details
Week1:	Computer Definition, Software, Hardware, Computer Genertions.
Week2:	MS-DOS Operating System, Definition Internal commands,Externalcommands
Week3-12:	Internal commands: Dir , Del , Time , Date , Cls , RD, CD, MD, Echo, Prompt, Ren < copy , vol, ver , path . External Commands: Edit , tree , xcopy , format , chkdsk, diskcopy
Week13-27	OperatingSystemWindows: Disktop, Icons, Taskbar,Start, Shutdown,My computer,Control Panel, Windows media player,Calculator,Paint,Note Pad, Help
Week28-30	Computer Viruses,Antivirus.

Course Description Form

13.	Course Name: Engineering Drawing
14.	Course Code: ED
15.	Semester / Year: The first is an annual course
16.	Description Preparation Date:15\2\2024
17.Available Attendance Forms: practical study	
18.Number of Credit Hours (Total) / Number of Units (Total): 90	
19. Course administrator's name (mention all, if more than one name)	
Name: Alaa Shaker Aobida Email: alaashaker2025@gmail.com	
20. Course Objectives	

Course Objectives	Teaching the student to perform engineering drawing using the AutoCAD program

21. Teaching and Learning Strategies	
Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	Practical=3	Teaching the student to perform engineering drawing using the AutoCAD program	AutoCAD program	Lectures and practical training	Oral exams And practical training

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. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering drawing book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Vocabulary details
1	The importance of engineering drawing - The importance of using a computer to implement engineering drawing - Drawing board sizes (standard) - An overview of the AutoCAD program
2	Types of lines in engineering drawing - using drop-downs for lines and texts
3-4	Basic shapes
5-6	Drawing adjustments - Drawing aids
7-8-9	Engineering operations - dimensioning - applications to previous concepts
10-11-12-13	Perspective Drawing - Drawing a perspective containing a circle, rectangle, triangle and polygon
14-15	Projection theory - drawing simple projections
16-17	Placing dimensions on perspective and projections

18-19-20	Conclusion of the third site from two sites
21-22-23	Cutting theory - shapes of cutting lines according to the material - drawing cut sections
24-25-26	Drawing projections cut from a specific projection
28-27	Drawing partially cut projections
30-29	Applications and projects

Course Description Form

13.	Course Name: Rights and democracy
14.	Course Code: RD
15.	Semester / Year: The first is an annual course
16.	Description Preparation Date:8\2\2024
17.Available Attendance Forms: Theoretical	
18.Number of Credit Hours (Total) / Number of Units (Total): 60	

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

Name: ASSAD dakel hadi
EMAIL:assad.hadi@atu.edu.iq

20.   Course Objectives

Course Objectives	**Teaching students the basic concepts of human rights and democracy**

21.   Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy

	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	Therotical=2	Teaching students the concepts of human rights democracy	Human rights	Lectures and practical training	Oral exams And practical training

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. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Systematic human rights book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	reports
Electronic References, Websites	Internet

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 6- 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

18	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

1.Course Name: Baath crimes
2.Course Code: : в с
3.Semester / Year: The first class course
4.Description Preparation Date:15\2\2024
5.Available Attendance Forms: theoretical study
6.Number of Credit Hours (Total) / Number of Units (Total):   60
7.Course administrator's name (mention all, if more than one name)
Name: Assad Dakel Hadi Email: assad.hadi@atu.edu.iq

8. Course Objectives

Course Objectives	It is to shed light for the generations born after the fall the regime on the many crimes committed by the Baat Party regime and Saddam Hussein against the Iraqi people. These crimes were diverse, including war crim crimes against humanity, genocide, and economic crim

9. Teaching and Learning Strategies

Strategy	Internet and Display screen, educational charts,

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=2	Learn about crimes committed by former regime	Baath crimes	Lectures and practical training	Oral exams And practical training

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
    5   - 50 marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Baath crimes book
Main references (sources)	Methodical books
Recommended books and references (scien journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Item
1	The concept of crimes linguistically and terminologically Crime departments

Course Description Form

1..Course Name: English language

2.Course Code: : E L

3.Semester / Year: The first class course

3.Description Preparation Date:15\2\2024

4.Available Attendance Forms: theoretical study

5.Number of Credit Hours (Total) / Number of Units (Total):   30

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

Name: Alaa Hussein Majeed
Email: alaa.majeed.bib23@atu.edu.iq

7.Course Objectives

Course Objectives	To provide the students with basic skills in both general a scientific English Language

8.Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

9.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=1	To provide the stud with basic skills in both general and scientific English Language	English language	Lectures and practical training	Oral exams And practical training

10.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
   5   - 50 marks final exam

11.Learning and Teaching Resources

Required textbooks (curricular books, if any	Technical English book project
Main references (sources)	Methodical books
Electronic References, Websites	Internet
Recommended books and referen (scientific journals, reports...)	Reports
Electronic References, Websites	Internet

Week	Topics
1-4	Unit -1- Introduction and Review to English language. Introduction to parts of speech. Sentence Patterns.
5-6	Unit -2- Reading Comprehension and structure (selected scientific passages general to all specializations)
7-8	Scientific Attitude (Simple present)
9-10	Mathematics(passive)
11-12	Scientific Methods (simple past)
13	Test
14-15	Unit -4- Conversation (from daily life Meeting people
16-17	Talking about your job
18-19	Unit -5- The use of library, Dictionary, and Internet.

20-21	Unit -6- Translation Selected topics from internet to be translated.
22-25	Unit -7- Writing Technical Reports
25-29	Unit -8- Terminology Selected Passages according to specializations
30	Final Test

Course Description Form

1..Course Name: The project
2.Course Code: P
3.Semester / Year: The second   class annual course
4.Description Preparation Date:15\2\2024
5.Available Attendance Forms: theoretical study
6.Number of Credit Hours (Total) / Number of Units (Total):   60
7.Course administrator's name (mention all, if more than one name)
Name: Alaa Hussein Majeed Email: alaa.majeed.bib23@atu.edu.iq Name: Raed Salman Saeed Email: raed.saeed@atu.edu.iq Name: ASRAA ADNAN NAGEM Email: asraa@atu.edu.iq
8.Course Objectives

Course Objectives	The course works to provide the student with practical ski and abilities by adopting the idea of repairing or building refrigeration device Integrated while transferring the

	theoretical and applied information he studied into a tangible practical reality

9.Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=2			Lectures and practical training	Oral exams And practical training

10.Course Evaluation

The degree is distributed
1-70 marks for the discussion committee's evaluation
2-31   arks for the competent supervisor's evaluation

11.Learning and Teaching Resources

Required textbooks (curricular books, if any	According to the project topic
Main references (sources)	Methodical books
Recommended books and referen (scientific journals, reports...)	Reports
Electronic References, Websites	Internet

	Item
	Student projects are distributed to branch students by the branch or department and under the supervision of a professor, so that the projects include one of the following aspects: 1- Making integrated maps for a refrigeration or air conditioning device, within the specialized devices, and manufacturing parts or assembling the devices or accessories, and carrying out the necessary checks and tests on it after that. 2- The process of calculating the air conditioning loads for any

| | public building and drawing the necessary diagrams and maps for all air ducts and water transmission pipes, as well as illustrations of the required accessories, installing the pipes and devices, the sequence of control devices, and testing the devices. |

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
the first	A.C	Air conditioning - cooling	Basic	*				*				*			
the first	FT	Fluids and Thermodynamics	Basic	*				*				*			
				*				*				*			
the first	MA	mathematics	Assistant	*				*				*			
the first	CA	Computer applications	Assistant	*				*				*			
the first	ML	Mechanics lab	Basic	*				*				*			
the first	ED	Engineering Drawing	Basic	*				*				*			
the first	RD	Rights and democracy	Assistant	*				*				*			
			Basic	*				*				*			
The second	AC	air conditioner	Basic	*				*				*			

				*				*				*			
The second	AS	Air systems	Basic	*				*				*			
The second	CD	Control systems devices	Basic	*				*				*			
The First	ET	Electrical technology	Basic	*				*				*			
The second	IM	Industrial management	Assistant	*				*				*			
The second	DRC	Drawing of refrigeration and air conditioning systems	Assistant	*				*				*			
The second	CA	Computer applications	Assistant												
The second	P	project	Basic	*				*				*			
The second	RCM	Refrigeration and air conditioning equipment maintenance	Basic	*				*				*			
The first	EL	English language	Assistant	*				*				*			
The first	BC	Baath crimes	Assistant	*				*				*			

Course Description Form

Course Name: Fluids and Thermodynamics (M.D.H.)

1. Course Code: FT

2. Semester / Year: The First is an annual course

3. Description Preparation Date:15\2\2024

4. Available Attendance Forms: Theoretical and practical study

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

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

Name: Zahraa Kazem Rodhan Email: zahraakaz78@atu.edu.iq

7. Course Objectives

Course Objectives	Teaching the student, the basic concepts of fluid mechanics and thermodynamics

8. Teaching and Learning Strategies	

Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=1	**the basic concepts fluid mechanics thermodynamics**	1, pressure, temperature	Lectures and practical training	Oral exams And practical training

10. Course Evaluation

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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fluids book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week No.	Syllabus
1	Types of unit systems, density, specific volume, pressure, temperature (Celsius and absolute),Properties of fluids : difference between fluids and solid metals, difference between liquids and gases
2	Definition of density, relative density, specific weight, specific volume, ideal fluid, real fluid, examples.
3	Shear stress, dynamics of fluid flow, Newton's Law of viscosity, dynamic viscosity, kinematic viscosity , surface tension.- Capillarity, liquid vapour pressure,
4-6	Pressure, liquid pressure head, Pascal aw of pressure, variation of liquid pressure heat with respect to gravity, pressure at a datum for stationary liquid.
	Absolute pressure, gage pressure, barometer, pressure gage equipment.
	Bourdon gage, Piezometer, U tube manometer, comparative gage.
7	Fluid motion, fluid flow, pressure of fluid flow, laminar flow, turbulent flow, velocity profile of flow, Reynold's number.
8	Flow rate, volumetric flow rate, mass flow rate, - Continuity equation, problems on continuity equation for uncompressibil fluids.

Week No.	Syllabus
9-11	Bernoulli equation and application.
12-14	First law of thermodynamics, kinds of energy, (dynamic energy, potential mechanical energy, internal energy, heat , work), work of a system represented on pressure – volumle diagram, energy of flow, enthalpy, energy – conservation equation of first law of thermodynamics.
	Classifications of systems, application of first law of thermodynamics on closed systems, energy equation for steady flow, some application on first law for steady state open systems, application on first law for steady state open systems, application on (nozzle, diffuser, through, condenser, boiler, turbine, compressor, heat exchanger, open plane), representation of work for open systems for steady flow on pressure volume diagram, examples.
15	5) Second law of thermodynamics : Reversible process, entropy, temperature-entropy diagram, coordinates place on T-S diagram, cycles, work of cycle, thermal efficiency of cycle, examples. State of second law for heat engine, and for heat pump.
16-19	Ideal Gas : Specific heat at constant volume, specific heat at constant pressure, equation of ideal gas state, gas constant, universal gas constant
	Constant volume process, constant pressure process, constant temperature process, studying of process on P – V diagram and T – S diagram, examples.
20-24	Adiabatic process, isentropic process, studying of process on P -V diagram and T-S diagram , examples.
	standard air cycles : Carnot cycle, reversed carnot cycle, studying of cycle on P – V diagram and T – S diagram, examples.
	Auto cycle, dessel cycle, studying of cycle on P – V diagram and T – S diagram, calculating heat changed, work and efficiency of each cycle.
	Combined cycle, studying of cycle on P – V diagram and T – S diagram, finding heat changed, work , efficiency , parameters affecting on standard air cycle efficiency, comparision between, Autto, dessel, dual cycles), examples.
25-28	Heat transfer by conduction : Steady state heat conduction, conduction through homogenous plane wall, conduction through composite wall, thermal resistance, heat conduction through homogenous cylindrical wall, heat conduction through multi layers cylindrical wall, examples.
	Heat transfer by convection : free &forced-thermal resistance
	Heat transfer by radiation, definition of thermal radiation, emissivity of black body, Stefan – Boltzmann law for radiation, emissivity
29-30	Heat exchangers and their types, logarithmic mean temperature difference, calculations of heat exchangers, effectiveness of heat exchangers, examples.

Course Description Form

Course Name Electrical technology
1. Course Code: E.T
2. Semester / Year: The First is an annual course
3. Description Preparation Date:15\2\2024
4. Available Attendance Forms: Theoretical and practical study
5. Number of Credit Hours (Total) / Number of Units (Total):   120
6. Course administrator's name (mention all, if more than one name)
Name: Zena Salah Hassan Email: zena@atu.edu.iq

7. Course Objectives

Course Objectives	The course aims to provide the student with the scientific and practical foundations of electrical and machinery technology, which he will actually use when practicing his specialty.

8. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	theoretical=2 Practical=2	provide the student with the scientific and practical foundations of electrical and machinery	Introduction to electron technology	Lectures and practical training	Oral exams And practical training

10. Course Evaluation

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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electricity technology book
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

week	Item
1	Introduction to electron technology, definitions, amperes, current, voltage, resistance, ohms.
2	Electronic parallelism and energy, mutual circuit, mixed circuit
3	Electronic parallelism and energy, mutual circuit, mixed circuit
4	Kirchhaf's Law, ohms, applications
5	Kirchhaf's Law, ohms, applications
6	Principles of electronic magnets, magnetic field, magnetic force, magnetic density.
7	Electronic magnetism
8	Alternating current, alternating current generation and voltage characteristics, EMF, EMI wave formation, example.
9	Alternating current, alternating current generation and voltage characteristics, EMF, EMI wave formation, example.
10	Single-phase alternating current resistance circuit, coil circuit, capacitor circuit, phase diagram, phase angle.
11	Resistance file of circuit contents, capacitors connected in series, power calculations, power factor, modified power methods, trend diagrams.
12	Resistance file of circuit contents, capacitors connected in series, power calculations, power factor, modified power methods, trend diagrams.
13	Three-phase alternating current, generation, wiring and connection methods, star, delta, voltage lines, current lines, phase diagrams, current, voltage and power.
14	Three-phase alternating current, generation, wiring and connection methods, star, delta, voltage lines, current lines, phase diagrams, current, voltage and power.
15	Electrical transformer, methods and types of work, construction, applications, losses in the transformer, transformer testing, transformer efficiency, automatic transformer
16	Electrical transformer, methods and types of work, construction, applications, losses in the transformer, transformer testing, transformer efficiency, automatic transformer
17	Distribution of electronic energy (voltage law).
18	Converting solar energy into electricity.
19	DC motors, their components, working principles, types of applications, types of starting, losses, power calculations
20-21	DC motors, their components, working principles, types of applications, types of starting, losses, power calculations
22-23-24	Alternating current motors, their components, working principles, types of applications, single phase - three phases, types of starting, speed control.
25-26-27	Motor protection, current protection devices, overload, temperature, surge protection
28-29-30	Engine testing, engine maintenance and parts repair

Course Description Form

13.	Course Name: Air-conditioning
14.	Course Code: :
15.	Semester / Year: Second class course
16.	Description Preparation Date:15\2\2024
17.Available Attendance Forms: Theoretical and practical study	
18.Number of Credit Hours (Total) / Number of Units (Total): 120	
19.	Course administrator's name (mention all, if more than one name)

Name: Ali Assim Abd Al-Razak
Email: ali.nit2009@atu.edu,iq

20.	Course Objectives
Course Objectives	Introducing the student to a detailed study of the foundations of air conditioning and calculating thermal loads in the cooling and heating system, a study of the different air conditioning groups and the foundations of t design of air ducts and pipes, in addition to the topics of noise and air purification.

21.	Teaching and Learning Strategies
Strategy	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy

| | | 4- E-learning strategy | | | |
| | | 5- E-learning strategy | | | |

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachmen	theoretical= Practical=2			Lectures and practical training	Oral exams And practical training

23. Course Evaluation

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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1) Principles of air conditioning and refrigeration engineering - Khaled Al-Judi 2) Ashrae Handbook , Fundamentals
Main references (sources)	1) Applied Air – conditioning and refrigerat by C.T Gosling 2) Air – conditioning Engineering , by W. P. Jones 3) Environment Engineering , analysis & pract by Jennings 4) A course of refrigeration & Air-conditioning Arora S. Domkundwa
Electronic References, Websites	Internet

Subject	Weeks
Heat transfer – heat transfer by conduction – heat transfer coefficient, heat transfer by convection	1
Heat transfer by radiation, heat transfer through walls and composite walls , total Heat transfer coefficient	2

Subject	Weeks
Air- condition and feeling comfortable , Air movement , relative humidity wet and bulb temperature	3
Heating load , calculation of heating load losses	4
Cooling load Parameters & Calculations	5 – 7
Heating & Cooling systems	8
Psychometric chart , sensible and latent heat , configuration of air leaving the heating & cooling coil	9
Computer-aided calculation of cooling load.	10
Air ducting design , Kinds & pressure losses calculation included fittings	11 – 14
Movement energy , air discharge in rooms	15
Fans , fan laws, specification	16 – 17
Vibration and vibration sources	18
Piping design , types and Pumps calculation	19 – 21
Types of air condoning system & Air and water system	22 – 25
Application of air condoning systems in building	26 – 27
Air filtration methods	28
Air Washers	29
Energy distribution in air condoning system	30

Course Description Form

24 .Course Name: Drawing of refrigeration and air conditioning systems
25.   Course Code: : D.R
26.   Semester / Year: Second class course
27.   Description Preparation Date:15\2\2024
28.Available Attendance Forms: practical study
29.Number of Credit Hours (Total) / Number of Units (Total):   60
30.   Course administrator's name (mention all, if more than one name)
Name: Ahmed Hadi Hatif Email: ahmed.shuber@gmail.com

31. Course Objectives	
Course Objectives	It aims to provide the student with experience and skills enable him to read and draw architectural plans and air duct maps (according to specifications), as well as draw a read water systems for the purpose of connecting water between parts of air conditioning systems.

32. Teaching and Learning Strategies	
Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

33. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachmer	theoretical= Practical=2			Lectures and practical training	Oral exams And practical training

34. 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

35. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Refrigeration systems drawing book
Main references (sources)	Methodical books related to industrial drawin
Electronic References, Websites	Internet

week	Item
1	Drawing an architectural plan for a multi-storey building
2	A general idea of drawing air ducts in the single line style
3	Draw an air duct with two lines indicating the dimensions
4-5	Draw a complete air duct diagram (containing bend, T-branch, and other connections) with the dimensions indicated on it
6	Draw complete ductwork diagram with connection to hoist device or air exchange unit
7	Drawing a complete diagram of the air ducts with details of the drawing of the windows and air distributors... in their locations, with dimensions and air quantities indicated on them.
8-9	A general idea of drawing water pipes for air conditioning units (cooling water system - heating water system - condensing water system)

10-11	Drawing paintings for the coil and fan duct network with single - double - triple - quadruple doors
12	Drawing of the double riser tube within an integrated cooling system
13	Drawing a diagram of an integrated pipeline network, including control and measuring devices
14	Machine room layout drawing (single line and two piping lines)
15	Drawing sections of the machine room to illustrate the movement of the pipe within the space of the room
16	Drawing an architectural map of a single floor - showing how to connect the coil and fan units
17	Draw a diagram of the cooling water pipes connecting the machine room to the engine room on a specific floor
18-19	A three-dimensional drawing of the cooling, condensing and charging water system with valves and control devices installed
20-21 22-23 24-25	Drawing a diagram of the control systems for a condensing unit - an air exchanger unit, a home cooling panel... a separate cooling panel
26-27 28-29-30	Drawing supports and pipe fasteners, device supports, pump bases - with a scientific visit to one of the buildings to see the implementation of air ducts - and extending the water pipe network.

Course Description Form

1. Course Name: Mathematics
2. Course Code: : M
3. Semester / Year: The first is an annual course
4. Description Preparation Date: 15\2\2024
5. Available Attendance Forms: Theoretical study
6. Number of Credit Hours (Total) / Number of Units (Total):   60

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

Name: Dalael Saad Abdul-Zahra
Email: dalael.abdulzahra.iba5@atu.edu.iq

8. Course Objectives

Course Objectives	Teaching the student, a number of topics, such as matrices, determinants, functions, differentiation and integration, and statistics.

9. Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag
	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	theoretical=2	The student learns about matrices	Matrices, determinants, and their properties	Lectures	Homework's assignments, and written examinations
2	theoretical=2	The student learns about linear equations	Solving linear equations Linear equations, Cramer's method, applications, arc analys vectors	Lectures	Homework's assignments, and written examinations
3	theoretical=2	The student learns about Vectors	Vectors, analysis of limits, types vectors, quantities, standard vectors, curve algebra, vector arithmetic operations	Lectures	Homework's assignments, and written examinations
4	theoretical=2	The student learns About operations on Vectors	Unit orthogonal vectors, vect scaling, scalar and cross product, applications to vect arc moment analysis	Lectures	Homework's assignments, and written examinations
5	theoretical=2	The student learns About logarithms	Logarithm, definition of logarithm, laws of logarithm	Lectures	Homework's assignments,

			and how to use them, solving logarithmic equations		and written examinations
6	theoretical=2	The student learns About trigonometric Functions	Trigonometric ratios and the relationship between them, some laws in trigonometric ratios, the function, the mean of the function, the independ and dependent variables, the function	Lectures	Homework's assignments, and written examinations
7	theoretical=2	The student learns About algebraic functions,	Measurements, purpose of trigonometric and algebraic functions, applications of line velocity, areas	Lectures	Homework's assignments, and written examinations
8	theoretical=2	The student learns Derivative's	Details, derivative, derivative algebraic functions, application the implicit function chain rule	Lectures	Homework's assignments, and written examinations
9	theoretical=2	The student learns Derivative's	Higher order derivative, derivative of the exponential function, derivative of the logarithmic function	Lectures	Homework's assignments, and written examinations
10	theoretical=2	The student learns Derivative's	Derivative of trigonometric functions, derivative of circu functions	Lectures	Homework's assignments, and written examinations
11	theoretical=2	The student learns Partial Derivative's	Partial differentiation	Lectures	Homework's assignments, and written examinations
12	theoretical=2	The student learns Applications on Derivative's	Applications on the derivativ (slope equation, perpendicul velocity and acceleration)	Lectures	Homework's assignments, and written examinations
13	theoretical=2	The student learns Applications on Derivative's	Derivative applications (instantaneous change)	Lectures	Homework's assignments, and written examinations
14	theoretical=2	The student learns Applications on Derivative's	Increasing, decreasing, maximum and minimum lim inflection points, graphing th function	Lectures	Homework's assignments, and written examinations
15	theoretical=2	The student learns Integration	Integration, indefinite integration, integration of algebraic functions	Lectures	Homework's assignments, and written examinations
16	theoretical=2	The student learns exponential and logarith functions	Integration of exponential logarithmic functions	Lectures	Homework's assignments, and written examinations
17	theoretical=2	The student learns Integration	Integration of trigonometric functions	Lectures	Homework's assignments, and written examinations
18	theoretical=2	The student learns Integration	Definite integral, application (distance under the curve, distance between the curve)	Lectures	Homework's assignments, and written examinations
19	theoretical=2	The student learns The rotational Magnitudes	The rotational magnitudes a arc length of the curve	Lectures	Homework's assignments, and written examinations
20	theoretical=2	The student learns Approximation	Approximation in integratio (trapezoid rule, Simpson's ru	Lectures	Homework's assignments, and written

21	theoretical=2	The student learns Integration	Integration methods, retail integration	Lectures	Homework's assignments, and written examinations
22	theoretical=2	The student learns Integration	Integration by compensation method	Lectures	Homework's assignments, and written examinations
23	theoretical=2	The student learns Integration	Integration by partial fractio method for the first	Lectures	Homework's assignments, and written examinations
24	theoretical=2	The student learns Solving differential equations of the first order, i.e., discrete homogeneous	Solving differential equati of the first order, i.e., discr homogeneous	Lectures	Homework's assignments, and written examinations
25	theoretical=2	The student learns Differential equations	Differential equations - line applications	Lectures	Homework's assignments, and written examinations
26	theoretical=2	The student learns On C.N	Complex numbers - addition subtraction - division - multiplication	Lectures	Homework's assignments, and written examinations
27	theoretical=2	The student learns Applied formula	Applied formula: Converting carpentered characteristic to linear and vice versa	Lectures	Homework's assignments, and written examinations
28	theoretical=2	The student learns On Statistical	Statistical operations, freque distributions, histograms, frequency curve	Lectures	Homework's assignments, and written examinations
29	theoretical=2	The student learns On Statistical operations	Statistical operations, freque distributions, histograms, an frequency curve	Lectures	Homework's assignments, and written examinations
30	theoretical=2	The student learns On Statistical operations	Mean, range, standard deviation, variance	Lectures	Homework's assignments, and written examinations

11. Course Evaluation

The degree is distributed
  1- 10 marks for the first theoretical semester and 10 marks for practical.
  2- 10 marks for the second semester, theoretical + 10 marks 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
Main references (sources)	Calculus Analysis Geometry, Thomas
Recommended books and references (scientific journals, reports…)	Scientific research in the specialty
Electronic References, Websites	Internet

Course Description Form

1. Course Name: Applications Of Computer
2. Course Code: : A.C
3. Semester / Year: The first is an annual course
4. Description Preparation Date:15\2\2024
5. Available Attendance Forms: Theoretical and practical study
6. Number of Credit Hours (Total) / Number of Units (Total):   90
7. Course administrator's name (mention all, if more than one name)
Name: Alaa Hussein Majeed Email: alaa.majeed.bib23@atu.edu.iq
8. Course Objectives

Course Objectives	**Teaching the students about the computer and some applications.**

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1:	theoretical=1 Practical=2	Data show, Computer Machine, Screen Show	Computer Definition Software, Hardware Computer Genertion	Lectures and practical traini	Written exams And practical training
Week2:	theoretical =1 Practical=2	Computer Mechine, Ms-Dos system	MS-DOS Operating System, Definition, Internal commands, External Commands	Lectures and practical traini	Written exams And practical training
Week3-12:	theoretical =1 Practical=2	Computer Mechine, MS-DOS System	Internal commands: Dir , Del , Time , Dat Cls , RD, CD, MD, Ecl Prompt, Ren < copy vol, ver , path . External Commands: Edit , tree , xcopy , format , chkdsk, diskcopy	Lectures and practical traini	Written exams And practical training
Week13-27	theoretical =1 Practical=2	Computer Mechine, Windows System	Operating System Windows: Disktop, Icons, Taskbar, Start, Shutdown, My computer, Control Panel, Windows media player, Calculator, Paint, Note Pad, Help	Lectures and practical traini	Written exams And practical training
Week28-30	theoretical=1 Practical=2	Computer Mechine, Screen Show.	Computer Viruses, Antivirus.	Lectures and practical traini	Written exams And practical training

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer and its Applications
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports…)	Reports
Electronic References, Websites	Internet

Week	Vocabulary details
Week1:	Computer Definition, Software, Hardware, Computer Genertions.
Week2:	MS-DOS Operating System, Definition, Internal commands,Externalcommands
Week3-12:	Internal commands: Dir , Del , Time , Date , Cls , RD, CD, MD, Echo, Prompt, Ren < copy , vol, ver , path . External Commands: Edit , tree , xcopy , format , chkdsk, diskcopy
Week13-27:	OperatingSystem Windows: Disktop, Icons, Taskbar,Start, Shutdown, My computer,Control Panel, Windows media player,Calculator,Paint,Note Pad, Help
Week28-30:	Computer Viruses,Antivirus.

Course Description Form

25 .Course Name: Occupational management and safety

36. Course Code: : OMS

37. Semester / Year: Second class course

38.	Description Preparation Date:15\2\2024

39.Available Attendance Forms: Theoretical study

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

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

Name: Raed Salman Saeed
Email: raed.saeed@atu.edu.iq

42.   Course Objectives

Course Objectives	Teaching the student the foundations and principles of industrial management and occupational safety, public and private, through his dealings in refrigeration and air conditioning systems sites

43.   Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

44. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachment	Theoretical= 2			Lectures and practical training	Oral exams And practical training

45. 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

46. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Industrial management book Occupational safety book
Main references (sources)	Methodical books related Industrial management book 　　Occupational safety book
Recommended books and references (scient journals, reports...)	reports
Electronic References, Websites	Internet

Week	Item
1	Management
2	Management principles - management and factory levels - factory organization
3	Administrative functions
4	Facility functions
5	Choosing the factory location and the factors affecting it
6	Procurement - the relationship of procurement to other facility functions and purchasing steps
7	Warehouse - inventory - types of inventory
8	Types of warehouses - warehouse inventory
9	Determine the economic order quantity
10	Basic concepts in costs
11	Wages - types
12	Methods of calculating wages
13	Training - The importance of training
14	Training methods
15	Leadership, the competent manager, and types of managers - characteristics and qualities of managers and signs of good and poor management
16	Basic concepts in quality control (the concept of control) The concept of quality - the quality of quality control - the importance and benefits of quality control
17	Quality elements - design quality
18	Quality of implementation - reliability - costs of quality control

19	Standardization – Standard Specifications (Definition of Standard)
20	Types of standard specifications
21	Collecting data and information - frequency table - histogram
22	Quality control methods - the physical method - types of charts
23	Applications in using one of the types of charts
24	Maintenance - its objectives - types
25	Preventive maintenance - its benefits - sudden maintenance
26	Organization of the maintenance department
27	Industrial honesty and safety, the impact of industrial safety on production efficiency
28	Quality methods in industrial safety, general rules and systems for accident prevention
28	Industrial accidents and ways to prevent them
30	Personal protective equipment - fires and methods of fighting them

Course Description Form

26 .Course Name: Baath crimes
47.　　　Course Code: : B C
48.　　　Semester / Year: The first class course
49.　　　Description Preparation Date:15\2\2024
50.Available Attendance Forms: theoretical study
51.Number of Credit Hours (Total) / Number of Units (Total):　 60
52.　　　Course administrator's name (mention all, if more than one name)
Name: Assad Dakeel Email:assad.hadi@atu.edu.iq

53. Course Objectives

Course Objectives	It is to shed light for the generations born after the fall of the regime on the many crimes committed by the Baath Party regime and Saddam Hussein against the Iraqi peop These crimes were diverse, including war crimes, crimes against humanity, genocide, and economic crimes

54. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

55. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachmer	theoretical=2			Lectures and practical training	Oral exams And practical training

56. 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

57. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Baath crimes book
Main references (sources)	Methodical books
Recommended books and references (scient journals, reports...)	reports

Electronic References, Websites	Internet

Week	Item
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

27 .Course Name: English language
58.   Course Code: : E L
59.   Semester / Year: The first class course
60.   Description Preparation Date:15\2\2024
61.Available Attendance Forms: theoretical study
62.Number of Credit Hours (Total) / Number of Units (Total):   30
63.   Course administrator's name (mention all, if more than one name)
Name: Alaa Hussein Majeed Email: alaa.majeed.bib23@atu.edu.iq

64.	Course Objectives	
Course Objectives		To provide the students with basic skills in both general a scientific English Language

65.	Teaching and Learning Strategies

Strategy	
	1-Reciprocal Teaching strategy
	2- Educational bag

	3- Discussion strategy
	4- E-learning strategy
	5- E-learning strategy

66. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=1			Lectures and practical training	Oral exams And practical training

67. 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

68. Learning and Teaching Resources

Required textbooks (curricular books, if any	Technical English book project
Main references (sources)	Methodical books
Recommended books and referen (scientific journals, reports...)	reports
Electronic References, Websites	Internet

Week	Topics
1-4	Unit -1- Introduction and Review to English language. Introduction to parts of speech. Sentence Patterns.
5-6	Unit -2- Reading Comprehension and structure (selected scientific passages general to all specializations)
7-8	Scientific Attitude (Simple present)
9-10	Mathematics(passive)

11-12	Scientific Methods (simple past)
13	Test
14-15	Unit -4- Conversation (from daily life Meeting people
16-17	Talking about your job
18-19	Unit -5- The use of library, Dictionary, and Internet.
20-21	Unit -6- Translation Selected topics from internet to be translated.
22-25	Unit -7- Writing Technical Reports
25-29	Unit -8- Terminology Selected Passages according to specializations
30	Final Test

Course Description Form

1.Course Name: The project
2.Course Code: P
3.Semester / Year: The second class annual course
4.Description Preparation Date:15\2\2024
5. Available Attendance Forms: theoretical study
6. Number of Credit Hours (Total) / Number of Units (Total):   60

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

Name: Alaa Hussein Majeed
Email: alaa.majeed.bib23@atu.edu.iq
Name: Raed Salman Saeed
Email: raed.saeed@atu.edu.iq
Name: Inas Jabbar Mohammed
Email: inas.inb@atu.edu.iq

8. Course Objectives

Course Objectives	The course works to provide the student with practical ski and abilities by adopting the idea of repairing or building refrigeration device Integrated while transferring the theoretical and applied information he studied into a tangible practical reality

9. Teaching and Learning Strategies

Strategy	1-Reciprocal Teaching strategy 2- Educational bag 3- Discussion strategy 4- E-learning strategy 5- E-learning strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
As in attachme	theoretical=2			Lectures and practical training	Oral exams And practical training

11. Course Evaluation

The degree is distributed
1-70 marks for the discussion committee's evaluation
2-30 marks for the competent supervisor's evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any	According to the project topic
Main references (sources)	Methodical books
Recommended books and referen (scientific journals, reports...)	reports
Electronic References, Websites	Internet

	Item
	Student projects are distributed to branch students by the branch or department and under the supervision of a professor, so that the projects include one of the following aspects: 1- Making integrated maps for a refrigeration or air conditioning device, within the specialized devices, and manufacturing parts or assembling the devices or accessories, and carrying out the necessary checks and tests on it after that. 2- The process of calculating the air conditioning loads for any public building and drawing the necessary diagrams and maps for all air ducts and water transmission pipes, as well as illustrations of the required accessories, installing the pipes and devices, the sequence of control devices, and testing the devices.