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

Academic Program and Course Description Guide

2023-2024

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Academic Program Description Form

University Name: Al-Furat Al- Awsat Technical University

Faculty/Institute: Engineering Technical College-Najaf

Scientific Department: Aeronautical Engineering Technical

Academic or Professional Program Name: Bachelor of Aeronautical Technical Engineering

Final Certificate Name: Bachelor of Aeronautical Engineering Technical

Academic System: Annual - for the academic year 2022/2023

Description Preparation Date : **4 /9 /2023**

File Completion Date: **5 /6 /2024**

Signature:

Head of Department Name:

Prof. Dr. Ali Sh. Baqir

Date: 09-06-2024

Signature:

Scientific Associate Name:

Date: 9/6/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 9/6/2024

Signature:

Approval of the Dean

1. Program Vision

- Pioneer in technical engineering education in the field of specialization
- Internationally recognized
- An educational entity with strong research

2. Program Mission

- Serve our students by teaching them problem solving, leadership and teamwork skills, the value of quality commitment, ethical behavior, and respect for others.
- Providing high-quality technical engineer graduates in the field of aerospace engineering.
- Innovative technology for the benefit of society locally and globally.
- Providing modern research in the field of aviation technology.
- Cooperating with civil and military bodies to market the skills of the field of specialization.
- Providing advice on obtaining a civil aviation license and an air service training license from
- European Aviation Safety Agency (EASA) and licenses for ground support...etc

3. Program Objectives

Due to the rapid scientific and technological progress in the field of aircraft technology, the Aeronautical Engineering Technology Department is working to achieve clear strategic goals that will help it achieve a prominent position within the academic communities, which are becoming clear

In the following:

1. Maintaining and improving the quality of the curriculum through:
   - Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with decision-makers for aircraft

engineering in all parts of the world and direct contact with colleges and institutes specialized in aircraft technology.

- Continuous evaluation and development of curricula.
- Linking student projects and research to community needs.
- Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.

2. Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.
3. Providing the best university environment for the teaching staff.
4. Maintaining the technical development of faculty members through:
   - Encouraging active participation in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.
   - Continuous review and evaluation of their activities.
   - Encouraging faculty initiatives and achievements.
5. Knowledge production through:
   - Conducting distinguished theoretical and applied research.
   - Encouraging scientific publishing and stimulating the collective work of research groups from different specializations.
   - Striving to increase sources of research funding through publishing in international engineering journals.
6. Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.
7. Activating and strengthening ties with public government agencies and the private sector through:
   - Organizing conferences, seminars and educational courses.
   - Encouraging consulting work and providing services at the professional level in all engineering specialties

4. Program Accreditation

A request for programmatic accreditation for the self-evaluation report of the Aeronautical Engineering Technology Department for the academic year 2021/2022 has been submitted to the presidency of Al-Furat Al-Awsat Technical University.

5. Other external influences

- Iraqi Airways
- The Iraqi Ministry of Defense
- The Iraqi Civil Aviation Authority
- Iraqi and international aircraft maintenance companies
- Local and international airports

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	5	12	6.2%	
College Requirements	11	48	25.2 %	
Department Requirements	24	130	%68.4	
Summer Training				
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
1st level	CREQ 141	Electrical Engineering	2	1
	CREQ 142	Eng. Drawing& Descriptive	1	3
	UREQ 161	Human Right & Democracy	2	
	MATH 151	Mathematics I	3	
	ARE112	Mechanics I	3	
	ARE111	Properties of Materials	2	
	ARE121	Thermodynamic I	2	2
	CREQ 143	Programming I	1	2
	CREQ 144	Work shop		6
	UREQ 162	English language I	1	
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
2nd level	ARE 223	Fluid Mechanics	2	2
	ARE 215	Manufacturing Processes	2	1
	MATH 252	Mathematics II	3	
	CREQ 246	Mechanical Drawing	1	3
	ARE 213	Mechanics II	3	
	ARE 214	Strength of Material	2	2
	ARE 231	Theory of flight	2	
	ARE 222	Thermodynamic II	2	2
	CREQ 245	Programming II	1	2
	UREQ 262	English language II	1	
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
3rd level	ARE 324	Aerodynamics	2	2
	ARE 332	Aircraft Elec. and instrument	2	2
	ARE 316	Mech. Eng. Design I	2	3
	CREQ 347	Eng. &Num. Analysis	2	
	ARE 325	Heat Transfer	2	2
	CREQ 348	Industrial Engineering	2	
	ARE 317	Theory of Machines	2	2
	ARE 333	Aircraft Engines	2	2
	ARE 326	Gas dynamic	2	1
	UREQ 362	English language III	1	
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
4th level	ARE 436	Aircraft Design	3	1
	ARE 435	Aircraft Engines & Jet Propulsion	2	1
	ARE 438	Aircraft Stability & Control	2	1
	ARE 434	Aircraft Structures	2	1
	ARE 439	Aircraft Sys. & Maintenance	2	2

	ARE 449	Computer Aided Engineering		3
	ARE 418	Automatic Control	2	1
	ARE 437	Aircraft Vibration	2	2
	CREQ 4410	Final project		4
	UREQ 462	English language IV	1	

8. Expected learning outcomes of the program

Knowledge and understanding	
A1	Ability to apply knowledge in mathematics, science, and engineering.
A2	Understand the professional and ethical responsibilities of the field of specialization.
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others
Subject-specific skills	
B1	Ability to work and integrate into multidisciplinary teams
B2	Ability to design and conduct experiments as well as analyze and interpret data.
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.
B4	Ability to identify and formulate engineering problems in the field of specialization
thinking skills	
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides
C2	Recognizing the need and ability to engage in lifelong learning.
C3	Knowledge of contemporary issues in the field of specialization
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems
Generic and transferable skills (other skills related to employability and personal development)	
D1	Ability to manage and work on ground and air support equipment for aircraft
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)

9. Teaching and Learning Strategies

In-person and electronic lecture, workshop, laboratory, methodological teaching, summer training

10. Evaluation methods

Oral exams, written exams, semester exams, final exams, daily assessment, homework, reports, seminars, simulation programs

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof. Dr.	Nuclear Eng.	Thermal			1	
Assistant. Prog Dr.	Mechanical	Applied			1	
Assistant. Prog Dr.	Mechanical	aerodynamic			1	
Assistant. Prog Dr.	Mechanical	combustion			1	
lecturer	Mechanical	Applied			3	
lecturer	Mechanical	Thermal			2	
lecturer	Materials	Materials			2	
lecturer	Manufacturing	Manufacturing			1	
lecturer	Mathematics	Mathematics			1	
lecturer	English/Arabic language	English/Arabic language			2	

Professional Development

Mentoring new faculty members

One of the tasks of the Aeronautical Engineering Technology Department is to hold training programs for new recruits on a regular basis and for appropriate periods that are compatible with the teaching strategies in the Aeronautical Technology Engineering Department with different types of learning outcomes that aim to develop the educational program. The teaching staff in the department is bound by the teaching and evaluation strategies explicitly stipulated in the course descriptions. Programs with sufficient flexibility to meet the needs of different groups and according to their individual differences.

Professional development of faculty members

One of the things that is taken into consideration when classifying an effective education system is placing the quality of teaching in an important position while providing learners with the knowledge in addition to the values and skills that they need during the various stages of their learning throughout their lives. Establishing a map of teaching and learning objectives in a clear strategy is considered one of the axioms in classifying an effective education system. These objectives may relate to improving the quality of teaching, developing mechanisms to manage teaching affairs, fully supporting it, developing its performance, and maintaining this level throughout one's professional life. Most education plans include strategies that actually encourage both quality and teaching, for example, developing educational curricula, developing teacher education, increasing the proportion of teachers to match the increase in the number of students, improving classroom conditions, and increasing the financial allocations allocated for this.

12. Acceptance Criterion

Graduates of the scientific branch of preparatory studies only, as there is no corresponding branch in vocational preparatory schools corresponding to the aviation major

13. The most important sources of information about the program

- University of Technology in Baghdad
- The Iraqi Ministry of Transport
- The American Academic Accreditation Board (ABET).

- European Transport Safety Agency EASA
- American Society of Mechanical Engineers (ASME).
- International Civil Aviation Organization ICAO
- Iraqi Civil Aviation Authority ICAA

14. Program Development Plan

1- Institutional commitment to continuous improvement of the quality of outputs:

The Aeronautical Engineering Technology Department is committed to the educational organization's continuous commitment to the strong participation of the educational organization's employees in quality assurance processes. It provides the Quality Assurance Division in the educational organization with the necessary resources and provides assistance to it wherever needed. All faculty and staff also participate in continuous improvement processes and prepare reports about them – each in their field of work – to reach the goal of continuous improvement of outcomes.

2- Use indicators and benchmarks

The Aeronautical Engineering Technology Department always compares its achievements with the previous year of plans that were developed during the academic year, as it works to add courses, workshops, seminars, research, and student projects to its scientific plan so that it keeps pace with the labor market and technical development.

3- Independent verification of standards

The Aeronautical Engineering Technology Department works to verify the results of the self-evaluation processes of performance quality, by examining their evidence and evidence, including feedback through questionnaires and the opinions of stakeholders and beneficiaries such as students, teachers, graduates, and employers (labor market) within the improvement processes. Continuous.

Program Skills Outline

Year Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes															
				Knowledge				Skills				Ethics							
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
1st level	CREQ 141	Electrical Engineering	Basic	0				0	0				0						
	CREQ 142	Eng. Draw. & Descrip.	Basic	0						0			0					0	
	UREQ 161	Human Right & Dem.	Basic		0			0											
	MATH 151	Mathematics I	Basic	0				0							0		0		
	ARE112	Mechanics I	Basic	0				0					0			0			
	ARE111	Properties of Materials	Basic	0				0					0				0		
	ARE121	Thermodynamic I	Basic	0				0				0							0
	CREQ 143	Programming I	Basic	0				0				0				0			
	CREQ 144	Work shop	Basic		0			0					0						
	UREQ 162	English language I	Basic	0				0					0				0		
2nd level	ARE 223	Fluid Mechanics	Basic	0					0				0				0		
	ARE 215	Manufac. Processes	Basic	0				0				0						0	
	MATH 252	Mathematics II	Basic	0					0				0				0		
	CREQ 246	Mechanical Drawing	Basic	0						0			0					0	
	ARE 213	Mechanics II	Basic	0				0					0				0		
	ARE 214	Strength of Material	Basic	0				0						0			0		
	ARE 231	Theory of flight	Basic			0		0			0						0		
	ARE 222	Thermodynamic II	Basic	0				0				0							0
	CREQ 245	Programming II	Basic	0						0			0				0		
	UREQ 262	English language II	Basic	0				0					0				0		

Program Skills Outline

Year Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes															
				Knowledge				Skills				Ethics							
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
3rd level	ARE 324	Aerodynamics	Basic	0				0				0							0
	ARE 332	Airc. Elec. and instr.	Basic	0				0				0				0			
	ARE 316	Mech. Eng. Design I	Basic	0					0			0					0		
	CREQ 347	Eng. &Num. Analysis	Basic	0					0				0			0			
	ARE 325	Heat Transfer	Basic	0	0			0					0				0		
	CREQ 348	Industrial Engineering	Basic			0					0	0				0			
	ARE 317	Theory of Machines	Basic	0				0				0							
	ARE 333	Aircraft Engines	Basic	0				0				0							0
	ARE 326	Gas dynamic	Basic	0					0			0							0
	UREQ 362	English language III	Basic	0					0			0				0			
4th level	ARE 436	Aircraft Design	Basic				0		0				0			0			
	ARE 435	Airc. Eng. & Jet Prop.	Basic	0				0				0				0			
	ARE 438	Airc. Stability & Cont.	Basic	0				0				0					0		
	ARE 434	Aircraft Structures	Basic	0				0				0				0			
	ARE 439	Airc. Sys. & Maint.	Basic		0			0				0				0			
	ARE 449	CAE	Basic	0		0		0	0	0	0				0		0		0
	ARE 418	Automatic Control	Basic	0				0				0			0	0			
	ARE 437	Aircraft Vibration	Basic	0				0				0					0		
	CREQ 410	Final project	Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UREQ 462	English language IV	Basic	0				0				0					0		

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University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: **Assistant prof**
Academic qualification: DECTORA
Work location: Aeronautical technology engineering

Course Description Form 2021/2022

1- Course Name	Human Right and Democracy
2- Course Code	**UREQ161**
3- Semester / Year	
2021/2022	
4- Description Preparation Date:	
15/5/2022	
5- Available Attendance Forms:	
Lectures in the presence of students (Online if necessary)	
6- Number of study hours (total)/number of units (total)	
30 hours-15 week / 4 unit	
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned	
Muaed Baqer Alaraaje	

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	2	Knowledge and understanding	√	تعريف الحق وعناصره مفهوم الشخصية القانونية	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	2	Knowledge and understanding	√	مميزات الشخصية الانسانية نشأت مصطلح حقوق الانسان	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	6	Knowledge and understanding	√	الحق بالحياة ، الحق بالكرامة وسلامة الشخصية الحقوق الشخصية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	2	Knowledge and understanding	√	الحق بالاقامة والتنقل ، الحق بالخصوصية الحق بالتكامل الجسدي ، الحق بالجنسية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	2	Knowledge and understanding	√	حماية من التجارب الطبية الحقوق الفكرية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	2	Knowledge and understanding	√	حرية الرأي ، حرية المعتقد حرية التعليم ، حرية الصحافة	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	2	Knowledge and understanding	√	حرية الاجتماع والتظاهر ، حرية تكوين الاحزاب والجماعات السياسية الحقوق السياسية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	2	Knowledge and understanding	√	حق الانتخاب والترشيح ، حق التوظيف الحق بالمساواة ومظاهره	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	2	Knowledge and understanding	√	الحقوق الاقتصادية الحقوق الاجتماعية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	2	Knowledge and understanding	√	الضمانات الدستورية لحماية حقوق الانسان الحق بالرعاية الصحية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	2	Knowledge and understanding	√	الضمانات الدستورية لحماية حقوق الانسان مبدأ الدستور المدون	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	2	Knowledge and understanding	√	مبدأ الفصل بين السلطات مبدأ سيادة القانون	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	2	Knowledge and understanding	√	الضمانات القانونية لحماية حقوق الانسان مبدأ لا جريمة ولا عقوبة الا بنص ، شخصية العقوبة	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	2	Knowledge and understanding	√	مفهوم الديمقراطية صور الديمقراطية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	6	Knowledge and understanding	√	حقوق الطلاب ووجباتهم في تعليمات انضباط الطلبة العقوبات الانضباطية في تعليمات انضباط الطلبة	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Work of the year/activities and absences	Report	Midterm Exam	/	Final/ exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
	Required textbooks (methodology, if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: lecturer
Academic qualification: Dectora
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Computer principals
2- Course Code
ATU13012
3- Semester / Year
2023/2024
4- Description Preparation Date:
2024/4/5
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
75 hours-15 week / 3 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
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8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	3	Knowledge and understanding	√	Introduction to programming using (Matlab) - Introduction to (Matlab) - Menu bar , tool bar, and program windows	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	3	Knowledge and understanding	√	**Format & numbers** - Real, Integer , Inf ,NaN, Complex numbers	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	3	Knowledge and understanding	√	**Variables** - Variable Names	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	3	Knowledge and understanding	√	**Variables** - Examples on variable names - Show the results	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	3	Knowledge and understanding	√	- Examples on (+ , - , * , /) - Outputs Intermediate results during calculations	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	3	Knowledge and understanding	√	**Built-in-functions** - Trigonometric Functions (sin , cos , tan , sec) Elementary Functions (abs, log10 , log, exp, sqrt)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	3	Knowledge and understanding	√	**Functions** - polyarea (X,Y) - polygon - Standard Deviation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	3	Knowledge and understanding	√	**Functions** - abs function - (max) - (min) (mean)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	3	Knowledge and understanding	√	**Logical commands** - Logical Operations > greater than >= greater than or equal < less than <= less than or equal = = equal = ~ not equal - Logical commands or (|), and (&)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	3	Knowledge and understanding	√	**Strings manipulation** - Creating Strings save	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	3	Knowledge and understanding	√	**Conditional commands** - if end If else - Examples Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	3	Knowledge and understanding	√	**Conditional commands** - if end if else - Examples Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	3	Knowledge and understanding	√	**loops** - for - while - Program control - Example Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	3	Knowledge and understanding	√	**loops** - for - while - Program control - Example Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	3	Knowledge and understanding	√	**Matrices** - Matrices manipulation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
	20		20	10	10	40

14. Learning and teaching resources	
Computer principle	Required textbooks (methodology, if any)
Computer principle	Main references (sources)
Computer principle	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Assistance lecturer
Academic qualification: Master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
CAD DRAWING
2- Course Code
ATU13016
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/7
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
93 hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
RAND KAREEM

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	6	Knowledge and understanding	√	CAD theories.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	6	Knowledge and understanding	√	CAD theories, Introduction to modeling system in SOLIDWORKS.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	6	Knowledge and understanding	√	Introduction to modeling system in SOLIDWORKS	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	6	Knowledge and understanding	√	Introduction to modeling system in SOLIDWORKS, 2D Modifies commands in SOLIDWORKS.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	6	Knowledge and understanding	√	2D Modifies commands in SOLIDWORKS, Main-Features commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	6	Knowledge and understanding	√	Main-Features commands	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	6	Knowledge and understanding	√	Main-Features commands, Mid-Term Exam.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	6	Knowledge and understanding	√	Modify-Features commands, Surfaces commands	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	3	Knowledge and understanding	√	Surfaces commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	6	Knowledge and understanding	√	Surfaces commands, Modify-Surfaces commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	6	Knowledge and understanding	√	Assembly commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	6	Knowledge and understanding	√	Assembly commands, Drawing sheet commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	6	Knowledge and understanding	√	Feet and clearance commands	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	6	Knowledge and understanding	√	Modeling of Bearing, Cams, and Gears.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	6	Knowledge and understanding	√	Modeling of Belts, Bolts, and Welding.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Work of the year/activities and absences	Report	Midterm Exam	/	Final/ exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
Purdue Univ, Prof Sham Tickoo. Solidworks 2016: A Tutorial Approach. United States: CADCIM Technologies, 2016.	Required textbooks (methodology, if any)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016.	Main references (sources)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: assistance lecturer
Academic qualification: master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Eng. Drawing &Descriptive
2- Course Code
CREQ 142
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/10
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
120hours-30 week / 4 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Ass. Lect. Rand Kareem

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	4	Knowledge and understanding	√	**Introduction to engineering drawing and eng. drawing equipment** - Introduction to engineering drawing and its importance to the engineer - History of eng. drawing - The standard drawing equipment	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	4	Knowledge and understanding	√	**Lettering** - The lettering and circles kind - The paper type and design with title table - Draw eng. Lines type and circles	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	4	Knowledge and understanding	√	**Applied geometry** - Applied geometry in eng. Drawing - Draw important eng. geometry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	4	Knowledge and understanding	√	Exercise in engineering geometry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	4	Knowledge and understanding	√	Exercise in engineering geometry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	4	Knowledge and understanding	√	**Pictorial drawing (Real model in true dimension)** - Draw cube shape with ovals by used four center method. - Non standard letters	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	4	Knowledge and understanding	√	Exercise in pictorial drawing	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	4	Knowledge and understanding	√	Exercise in pictorial drawing	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	4	Knowledge and understanding	√	**Orthographic projection** - Projection theory with definition standard planes (Horizontal and Vertical) - Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	4	Knowledge and understanding	√	**First angle projection** - Three projection definition (front, top and side view) - Draw in first angle - Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	4	Knowledge and understanding	√	**Dimensions** - Main rules in dimensions position and details in drawing - Exercise in applied dimension on projection view	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	4	Knowledge and understanding	√	Rules in dimension position for arcs and circles - Exercise in applied dimension on projection view	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	4	Knowledge and understanding	√	**Orthographic** - Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	4	Knowledge and understanding	√	- Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	4	Knowledge and understanding	√	**Sections** - Sections definition - Find sections and section planes and half section projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
16	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
17	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
18	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
19	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
20	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
21	4	Knowledge and understanding	√	**Third view estimate** - Important steps to estimate third unknown projection depending on the known two projection - Estimate real model	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
22	4	Knowledge and understanding	√	**Third view estimate** - Important steps to estimate third unknown projection depending on the known two projection - Estimate real model	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
23	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
24	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
25	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
26	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
27	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
28	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
29	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
30	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	10	40

14. Learning and teaching resources	
Purdue Univ, Prof Sham Tickoo. Solidworks 2016: A Tutorial Approach. United States: CADCIM Technologies, 2016.	Required textbooks (methodology, if any)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016.	Main references (sources)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Assist lecturer
Academic qualification: master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
General Arabic language
2- Course Code
ATU13017
3- Semester / Year
2024/2023
4- Description Preparation Date:
14/5/2024
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
78 hours-15week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Aseel Abbas Wadi

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	5	Knowledge and understanding	√	Parsing marks	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	5	Knowledge and understanding	√	Nominal sentence (subject and pred	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	5	Knowledge and understanding	√	Actual sentenc	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	5	Knowledge and understanding	√	The hamza and the rules for writing it	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	5	Knowledge and understanding	√	Dhaad and Dhaa	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	5	Knowledge and understanding	√	punctuation marks	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	5	Knowledge and understanding	√	Number and numerical adjective First Lesson	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	5	Knowledge and understanding	√	Number and adjective lesson two	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	5	Knowledge and understanding	√	A text from the Holy Qur'an, a collective text from ancient poetry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	5	Knowledge and understanding	√	Text of modern poetry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	5	Knowledge and understanding	√	A prose text from Nahj al-Balagha's sermons	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	5	Knowledge and understanding	√	Method of detection in the collection of Arabic dictionaries	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	5	Knowledge and understanding	√	Literary article	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	5	Knowledge and understanding	√	How to read a book (Lesson 1)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	5	Knowledge and understanding	√	How to read a book Lesson Two)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
Comprehensive general gramma	Required textbooks (methodology, if any)
Savior of Arabic grammar	Main references (sources)
Explanation of Ibn Aqeel on Al-Fiyah Ibn Malik	Recommended supporting books and references (scientific journals, reports....)
https://www.noor-book.com/tag/%D9%83%D8%AA%D8%A7%D8%A8-%D9%85	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Asst. Lect.
Academic qualification: Master degree
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
English
2- Course Code
ATU13011
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/7
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
15 hours-15 week / 2 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Asst. Lect.Hussam aldeen Nidhal Hadi

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	1	Knowledge and understanding	√	Able to identify linking Ideas: Present and Past Irregular Plurals, Consonants, There was/were	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	1	Knowledge and understanding	√	Identify countable and Uncountable Nouns, Imperatives Healthy Living and	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	1	Knowledge and understanding	√	Able to identify can for ability Could and Couldn't Skills at work	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	1	Knowledge and understanding	√	Able to identify can for requests Adjectives and Adverbs	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	1	Knowledge and understanding	√	Reading comprehensive-Beginners level	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	1	Knowledge and understanding	√	Sentences and their parts (simple, compound and complex) for beginner's level.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	1	Knowledge and understanding	√	Mid-term Exam	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	1	Knowledge and understanding	√	Paraphrasing-1, writing in your own words. Beginners level	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	1	Knowledge and understanding	√	Paraphrasing-2, writing in your own words. Beginners level (Practice)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	1	Knowledge and understanding	√	Effective writing, how to write in an effective way. Beginners level.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	1	Knowledge and understanding	√	Demonstrates knowledge about Offering and Inviting Why.? Would you like to...? Let's...? Free time activities	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	1	Knowledge and understanding	√	Able to identify (Be going to weak forms (Hedging in writing): Maybe/perhaps….etc)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	1	Knowledge and understanding	√	Demonstrates knowledge about Transport, Prepositions of movement Address Demonstrates knowledge about (Writing Activities)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	1	Knowledge and understanding	√	Demonstrates knowledge about Transport, Prepositions of movement Address Demonstrates knowledge about (Writing Activities)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	1	Knowledge and understanding	√	Writing short essay	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	10	40

14. Learning and teaching resources	
Headway plus	Required textbooks (methodology, if any)
	Main references (sources)
Skills in writing and Learning English	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Professor
Academic qualification: Doctorate
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name:
Principles of Electrical Circuits
2- Course Code:
ATU13025
3- Semester / Year
2024/2023
4- Description Preparation Date:
4/4/2024
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
6 per week- 90 totally hours / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Dr. Husam Noman MohammedAli
e-mail: coj.husm@atu.edu.iq

8. Expected learning outcomes of the program

Knowledge and understanding

1. Train the student on the ideal methods of dismantling and assembling electrical circuits and networks.
2. Teach the student the basic principles and basic components in electrical circuits.
3. Introduce the student to important terms used in simple and complex electrical circuits and networks.
4. Training students on the various mechanisms and mechanisms used in the methods of measuring the values of the electrical elements that make up different circuits and measuring the quantities of current and voltages entering and leaving simple and complex circuits.

9. Teaching and Learning Strategies

Strategies	• **Classical education method.** • **E-learning and distance education.** • **Brainstorming and student engagement.** • **Sudden rapid tests.** • **Scheduled tests.** • **Monthly and bi-monthly reports.** • **Lectures given by students in class**

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

Week	No: of hour peer week	Required Learning Outcomes	Unit or subject name	Learning Method	Evaluation method
One	6	Training the student to know the different types of electrical elements	Definition of the curriculum and definition of electrical elements	Classical teaching method	Brainstorming
Two	6	Training students and teaching them to decipher their colors and symbols	Definition of the values of the measured electrical quantities and the mechanisms for this.	Classic and explanatory captions using the YouTube platform	Q/A
Three	6	Teaching students the simple mathematical foundations of the mechanisms of connecting and dismantling simple electrical circuits	Simpe electrical circuits.	Classic and explanatory captions using the YouTube platform	Q/A and homework

Four	6	Teaching students to dismantle rather complex circles	Electrical Networks	Classic and method of direct instruction on the board with the student.	Q/A and homework
Five	6	Teaching students to measure currents passing through electrical elements, applied voltages and main voltages	Electrical Networks	Classic and method of direct instruction on the board with the student.	Q/A and homework
Six	6	Teaching students to measure the electrical potential and the potential difference on the edges of the different electrical elements	Electrical Networks	Explanation on the classic whiteboard and the use of the YouTube platform	Homework and the student prepared a report for the previous.
Seven	6	Teaching students on methods of measuring work, energy, dissipated energy and the resulting gain.	Dissipated electrical energy and the occurred gain.	Explanation on the classic whiteboard and the use of the YouTube platform	Daily preparation
Eight	6	Mid course exam	-	-	-
Nine	6	Training students on methods of measuring electrical power	Electrical power	Explanation on the board with solving examples in front of the student and choosing a group of students to solve examples in front of their classmates	Daily preparation and brainstorming
Ten	6	Teaching students the main laws and mechanisms used in the distribution of current and voltages on the arms and points of networks.	Main lows	Explanation on the board with solving examples in front of the student and choosing a group of students to solve examples in front of their classmates	Daily preparation and brainstorming
Eleven	6	Teaching students the basic concepts in the methods of extracting voltages and total currents entering and leaving the circuit.	Main lows	Explanation on the board with solving examples in front of the student and choosing a	Daily preparation and brainstorming

				group of students to solve examples in front of their classmates	
Twelve	6	Solve a set of sparse exercises	Theoretical application for the previous materials.	Explanation on the board with solving examples in front of the student and choosing a group of students to solve examples in front of their classmates	Homework and reports
Thirteen	6	Method of derivation of main laws in the electrical circuits and networks.	Theoretical application for th previous materials.	Explanation on the board or using the smart board or display screens	Examples prepared by students.
Fourteen	6	Sudden and rapid oral test.	-	-	-
Fifteen	6	Comprehensive review of the material.	-	-	-

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports, and the work of a research paper.

12. References of teaching and learning processes:

Required textbooks (methodology, if any)	• **Engineering Circuits Analysis; by: William H. Hyte** • **Text book: Electrical Technology; A.K. Theraja**
Main references (sources)	• **Engineering Circuits Analysis; by: William H. Hyte** • **Text book: Electrical Technology; A.K. Theraja**
Supporting books and references recommended by (scientific journals, reports ...)	**Fundamentals of Electric Circuits; 6th edition, Matthew Sadiku**
Electronic References, Websites	

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Professor
Academic qualification: Doctorate
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Fundamentals of Thermodynamics
2- Course Code
ATU13015
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/20
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
78hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Lect. Basil nouri abd mirzah

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	5	Knowledge and understanding	√	**Introduction** -Introduction to Thermodynamics -Thermodynamics System Dimensions, Units & symbols , units system	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	5	Knowledge and understanding	√	**Properties of System** Thermodynamic - Process Intensive & - extensive Variables Specific Value, - Mole Independent & dependent properties	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	5	Knowledge and understanding	√	**Thermal Equilibrium, Temperature** Thermal & - thermodynamic equilibrium Zero Law - Thermometers - Temperature Scale	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	5	Knowledge and understanding	√	**Energy** Types and source of - energy Kinetic & potential - energy The conservation of energy, use	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	5	Knowledge and understanding	√	**Kinetic Theory of Gases** Molecular - Motion of Gases Internal Energy, - joule's law Molecular Energy	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	5	Knowledge and understanding	√	**Heat** Specific Heat - □ Relation between - (q,Q,Q) Sensible & Latent - Heat Joule's Equivalent	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	5	Knowledge and understanding	√	**Work** Displacement Work - Work & (p-v) - Diagram State & Path - Function Electrical Work - Relation Between (Q, W)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	5	Knowledge and understanding	√	**Ideal (Perfect) Gas** Actual & Ideal Gas - Boyle's & Charles Law Equation of Ideal Gas - Absolute Scale	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	5	Knowledge and understanding	√	**Enthalpy** Enthalpy - Joule's Experiment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	5	Knowledge and understanding	√	**The First Law of Thermodynamic** Joule's Law - of Internal Energy The First Law - Statements Energy Equation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	5	Knowledge and understanding	√	**Application of the First Law on the Closed Systems** Constant - Volume Process Constant - Pressure Process Constant Temperature Process Adiabatic - Process Polytrophic Process	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	5	Knowledge and understanding	√	**Open systems** Motion of Fluid - Steady & none - Steady Flow Flow, Shaft Work - Energy Equation+	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	5	Knowledge and understanding	√	**Application of steady flow Energy Eq.** Boiler & Condenser - Compressor & Turbine Nozzle & throttling - Heat Exchanger	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	5	Knowledge and understanding	√	**The Second Law of Thermodynamics** Friction - Reversible & Irreversible Process	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	5	Knowledge and understanding	√	Heat Engine - Reversed - Heat Engine Engine - Thermal Efficiency Coefficient of Performance	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	20	30

14. Learning and teaching resources	
"Thermodynamics: An Engineering Approach" by Yunus A.	Required textbooks (methodology, if any)
"Fundamentals of Engineering Thermodynamics" by Michael J. Moran,	Main references (sources)
Thermodynamics: An Engineering Approach" by Yunus A.	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: lecturer
Academic qualification: Doctorate
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Engineering Materials
2- Course Code
ATU13022
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/2
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
30 hours-15 weeks / 4 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Dr. Adwaa Mohammed Abdulmajeed

8- Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	
thinking skills		

C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9- **Teaching and Learning Strategies**	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√

k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11- Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
	G1	Organizing conferences, seminars and educational courses	√

G- Activating and strengthening ties with public government agencies and the private sector	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12-

13- Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	2	Knowledge and understanding	√	**Introduction -Introduction to ores, elements and materials -Iron ores -Periodic table of elements -Engineering materials. -Classification of engineering materials**	The direct method is through lectures.	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
2	2	Knowledge and understanding	√	**Crystal structure - Atomic arrangement - BCC - FCC and HCP structures - Atomic packing factor.**	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	

		employability and personal development)								
3	2	Knowledge and understanding	√	Imperfections in crystals - Point defects - Dislocations and grain boundaries - Solidification of metals and alloys	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
4	2	Knowledge and understanding	√	- Structure of ingots chilled - Columnar and central equi-axed grains - Dendritic segregation.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	

		employability and personal development)								
5	2	Knowledge and understanding	√	**Thermal equilibrium diagrams - Solubility in the solid state - Phases - Solid solutions, compounds and mechanical mixtures.**	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
6	2	Knowledge and understanding	√	Lever rule - Eutectic, Eutectoid and Peritectic reactions. Applications on binary phase diagrams -Components completely soluble, completely insoluble or partially soluble in the solid state.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	

		employability and personal development)								
7	2	Knowledge and understanding	√	**Mechanical properties of metals - Specifications and standards - Normal stress and shear stress - Strain - Tensile and compression tests - Stress-strain diagram.**	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
8	2	Knowledge and understanding	√	**Application on mechanical testing and properties - Determination of Young's modulus - Yield stress - Proof stress - Ultimate tensile strength - Fracture stress, ductility - Hardness and impact toughness**	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	

		employability and personal development)								
9	2	Knowledge and understanding	√	- Iron and Steel - Fe-Fe3C phase diagram - Allotropy - Microstructure of carbon steels - Effect of carbon content on microstructure & mechanical properties of carbon steel. -Heat treatment of steel - Non-equilibrium cooling - TTT diagrams - Annealing, normalizing, hardening and tempering of steel.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
10	2	Knowledge and understanding	√	Carbon steel - Types, Properties and uses of carbon steel - Low, medium, and high carbon steel - Tool carbon steel. Cast Iron - Types, properties and uses of cast iron - White, grey, nodular and malleable cast iron	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
11	2	Knowledge and understanding	√	Non- destructive inspection - Liquid penetrant - Magnetic particle -X-rays - Ultrasonic.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
12	2	Knowledge and understanding	√	Nano materials - Characterization of nano particles and nano structures - Classification -Applications of nano materials in technology and medicine.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
13	2	Knowledge and understanding	√	Plastics - Introduction to plastics technology - Microstructure and polymerization - Structure of plastics materials. - Classification, properties and uses of plastics	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
14	2	Knowledge and understanding	√	Ceramics and glass - Structure, defects, properties and uses of ceramics. - Structure, properties and uses of glasses.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	
15	2	Knowledge and understanding	√	Composite Materials - Classification: metal matrix, ceramic matrix and polymer matrix composites - Reinforcing phase: fibers, flakes, and particles. - Composites structure and volume fraction - Properties and uses of composites.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmenters	√

13- Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	**Assignments**	**Projects**	**Report**	**Midterm Exam**	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14- Learning and teaching resources	
E I G H T H E D I T I O N Materials Science and Engineering An Introduction [William D. Callister, Jr. and David G. Rethwisch]	Required textbooks (methodology, if any)
E I G H T H E D I T I O N Materials Science and Engineering An Introduction [William D. Callister, Jr. and David G. Rethwisch]	Main references (sources)
Essentials of Materials Science and Engineering Second Edition, SI	Recommended supporting books and references (scientific journals, reports....)
https://youtube.com/@WkhalifaMr	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Assist lecturer
Academic qualification: master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Math
2- Course Code
ATU13013
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/2
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
78 hours-15week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Mariam ameen aliwi

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	5	Knowledge and understanding	√	Determinants and solution of linear equation by Gramer's rule	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	5	Knowledge and understanding	√	Trigonometric functions and some applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	5	Knowledge and understanding	√	Vectors, scalar and vector product and projections, mechanical applications to vectors	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	5	Knowledge and understanding	√	Limit and continuity, and some applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	5	Knowledge and understanding	√	Derivative theory, derivatives of algebraic and implicit functions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	5	Knowledge and understanding	√	Chain rule, mechanical applications on the derivative	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	5	Knowledge and understanding	√	The inverse function and its derivative	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	5	Knowledge and understanding	√	Derivative of logarithmic and hyperbolic functions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	5	Knowledge and understanding	√	Integration, definite and indefinite integral, integration of trigonometric and logarithmic functions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	5	Knowledge and understanding	√	Retail integration	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	5	Knowledge and understanding	√	Integration by division of fractions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	5	Knowledge and understanding	√	Integration by trigonometric function method	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	5	Knowledge and understanding	√	Integration by completing the square	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	5	Knowledge and understanding	√	Simplified differential equations	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	5	Knowledge and understanding	√	Approximate area using the trapezoidal rule and Simpsons	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
	Required textbooks (methodology, if any)
Calculus, R. Mohammed and A. Abdulaali, 2002	Main references (sources)
Calculus,frank Iris Advanced calculus, Murray R. Splegel, 1962	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Assist lecturer
Academic qualification: master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Math
2- Course Code
ATU13021
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/2
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
78 hours-15week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Mariam ameen aliwi

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Dect assessment method		Indirect assessment method		
1	5	Knowledge and understanding	√	**Ordinary Linear Differential Equations** - 1st order differential equations - Separable - Homogeneous.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	5	Knowledge and understanding	√	- Exact - Linear - Bernoulli	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	5	Knowledge and understanding	√	2nd Order Differential Equations - Reducible to 1st order - Homogeneous	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	5	Knowledge and understanding	√	- Non-Homogeneous	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	5	Knowledge and understanding	√	- Higher Order Differential Equations - Homogeneous - Non-Homogeneous - Applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	5	Knowledge and understanding	√	**Partial Differentiation** - Definition - Mechanism of Differentiation - Functions of Two Variables - Functions of Higher Variables	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	5	Knowledge and understanding	√	- Transformation - Chain Rule - Total Differential	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	5	Knowledge and understanding	√	-Gradient, Divergence, and Curl of Vector - Equation of Normal Line and Tangent Plane	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	5	Knowledge and understanding	√	- Directional Derivative - Maxima, Minima and Saddle Points - Lagrange Theorem	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	5	Knowledge and understanding	√	Sketching of Geometric Shapes - Double Integrals - Triple Integrals - Application	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	5	Knowledge and understanding	√	**special Function** - Gama Function - Beta Function	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	5	Knowledge and understanding	√	**Polar Coordinates** - Polar Curve Representation - Sketching of Polar Curve - General Curve	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	5	Knowledge and understanding	√	- Special Curve (Line, Circle, Conic Section) - Rotation of Axis	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	5	Knowledge and understanding	√	- The Arc Length of Polar Curve - Surface Area of Rotation - The Angle Between The Tangent Line and Radius Vector For a Polar Curve.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	5	Knowledge and understanding	√	- Slope of Tangent - Asymptotes - Plane Area	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
	Required textbooks (methodology, if any)
Calculus, R. Mohammed and A. Abdulaali, 2002	Main references (sources)
Calculus,frank Iris Advanced calculus, Murray R. Splegel, 1962	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Assistance lecturer
Academic qualification: Master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Engineering Mechanics-Static
2- Course Code
ATU13024
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/3
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
78 hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Ass.lect. Rand Kareem

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	5	Knowledge and understanding	√	**Engineering Mechanics-Static** **Introduction to static , vectors**	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	5	Knowledge and understanding	√	**Forces**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	5	Knowledge and understanding	√	**3D Forces**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	5	Knowledge and understanding	√	**Moments**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	5	Knowledge and understanding	√	**couples**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	5	Knowledge and understanding	√	**Resultant**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	5	Knowledge and understanding	√	**Resultant**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	5	Knowledge and understanding	√	**Equilibrium**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	5	Knowledge and understanding	√	**Trusses, planes, joint method**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	5	Knowledge and understanding	√	**Frame and Machines**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	5	Knowledge and understanding	√	**Friction**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	5	Knowledge and understanding	√	**Application of friction on bearings**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	5	Knowledge and understanding	√	**Centered of line, area and volume**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	5	Knowledge and understanding	√	**Moment of inertia**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	5	Knowledge and understanding	√	**Theory of parallel axes**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	**Assignments**	**Activities and absences**	**Report**	**Midterm Exam**	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Required textbooks (methodology, if any)
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Main references (sources)
ENGINEERING MECHANICS, statics by J. L. MERIAM	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: lecturer
Academic qualification: doctorate
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Physics
2- Course Code
ATU13023
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/3
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
78 hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
lect. Moaad Mohammad Abd

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	5	Knowledge and understanding	√	Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	5	Knowledge and understanding	√	Statics Forces, moments and couples, representation as vectors; Centre of gravity.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	5	Knowledge and understanding	√	Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	5	Knowledge and understanding	√	fluid and gas; Pressure and buoyancy in liquids (barometers). Fluid dynamics (a) Specific gravity and density; (b) Viscosity, fluid resistance, effects of streamlining.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	5	Knowledge and understanding	√	Effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	5	Knowledge and understanding	√	Kinetics Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/centripetal forces); Periodic motion: pendular movement; Simple	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√	theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.	An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	5	Knowledge and understanding	√	Dynamics (a) Mass Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency; (b) Momentum, conservation of momentum; Impulse	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	5	Knowledge and understanding	√	Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	5	Knowledge and understanding	√	Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition. (b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics;	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	5	Knowledge and understanding	√	Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	5	Knowledge and understanding	√	Isothermal, adiabatic expansion and compression, engine cycles, constant volume & constant pressure, refrigerators & heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	5	Knowledge and understanding	√	Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	5	Knowledge and understanding	√	reflection by spherical mirrors, refraction, lenses; Fibre optics.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	5	Knowledge and understanding	√	Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	5	Knowledge and understanding	√	Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	**Assignments**	**Activities and absences**	**Report**	**Midterm Exam**	Final/practical exam	Final/theoretical exam
10	10	10	10	10	20	30

14. Learning and teaching resources	
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Physics for Scientists & Engineers & Modern Physics, 9th Ed by Serway, Jewett
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Fundamentals of Physics Textbook David Halliday
ENGINEERING MECHANICS, statics by J. L. MERIAM	
You Tube, Electronic websites	

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

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Aeronautical technology engineering
Scientific title: Assistance lecturer
Academic qualification: Master
Work location: Aeronautical technology engineering

Course Description Form 2023/2024

1- Course Name
Mechanics I
2- Course Code
ARE112
3- Semester / Year
2024/2023
4- Description Preparation Date:
2024/4/25
5- Available Attendance Forms:
Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)
90 hours-30 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned
Ass.Lect. Rand Kareem

8. Expected learning outcomes of the program

Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, ...)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure											
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method		
1	3	Knowledge and understanding	√	**Introduction to Statics**	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions		
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters		
2	3	Knowledge and understanding	√	**Vectors**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions		
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions		
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.		

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
3	3	Knowledge and understanding	√	**Vectors**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
4	3	Knowledge and understanding	√	**Forces**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
5	3	Knowledge and understanding	√	**Force in 3D**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
6	3	Knowledge and understanding	√	**Moments**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
7	3	Knowledge and understanding	√	**Couples**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
8	3	Knowledge and understanding	√	**Resultant**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
9	3	Knowledge and understanding	√	**Resultant**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
10	3	Knowledge and understanding	√	**Equilibrium**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
11	3	Knowledge and understanding	√	**Planes Trusses**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
12	3	Knowledge and understanding	√	**Joint Method**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
13	3	Knowledge and understanding	√	**Section Method**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
14	3	Knowledge and understanding	√	**Trusses in 3D**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
15	3	Knowledge and understanding	√	**Frames and Machines**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√
16	3	Knowledge and understanding	√	**Frames and Machines**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
17	3	Knowledge and understanding	√	**Frames and Machines**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
18	3	Knowledge and understanding	√	**Friction**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
19	3	Knowledge and understanding	√	**Wedges and Screws**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
20	3	Knowledge and understanding	√	**Belts**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
21	3	Knowledge and understanding	√	**Application of friction on bearings**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
22	3	Knowledge and understanding	√	**Application of friction on bearings**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
23	3	Knowledge and understanding	√	**Centered of line , area and volume**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
24	3	Knowledge and understanding	√	**Centered of line , area and volume**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
25	3	Knowledge and understanding	√	**Moment of inertia**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
26	3	Knowledge and understanding	√	**Moment of inertia**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
27	3	Knowledge and understanding	√	**Theory of parallel axes**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
28	3	Knowledge and understanding	√	**Theory of parallel axes**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
29	3	Knowledge and understanding	√	**Problems**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	
30	3	Knowledge and understanding	√	**Problems**	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmenters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
20	/	20	/	10	/	50

14. Learning and teaching resources	
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Required textbooks (methodology, if any)
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Main references (sources)
ENGINEERING MECHANICS, statics by J. L. MERIAM	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites