وزارة التعليم العالي والبحث العلمي
جـــهاز الإشـــراف والتقـــويم العلـمي
دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد
للعام الدراسي
الجامعة : جامعة الفراهيدي
الكلية /المعهد : الكلية التقنية الهندسية
القسم العلمي : قسم هندسة تقنيات الطيران
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التوقيع :
اسم رئيس القسم : د. مقداد صباح يارحمن
التاريخ : ٤/٦/٢٠٢٣

التوقيع :
اسم المعاون العلمي : د. محمد عباس الكبيسي
التاريخ :

دقق الملف من قبل
شعبة ضمان الجودة والأداء الجامعي
اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.د. جمال ناشل توسكه
التاريخ ٧/٦/٢٠٢٣
التوقيع

مصادقة السيد العميد

وصف البرنامج الأكاديمي د. محمد عباس الكبيسي

Academic Program Description

This academic program description provides a brief summary of the most important characteristics of the program and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available opportunities. It is accompanied by a description of each course within the program

Farahidi University	**1. Educational institution**
Department of Aeronautical Technology Engineering	**2. Scientific Department / Center**
Aerospace Technology Engineering	**3. Name of academic or vocational program**
Bachelor	**4. Final Certificate Name**
annual	**5. Academic System:** **Annual / Decisions / Other**
There isn't any	**6. Accredited Accreditation Program**
Miscellaneous two months training at the Aviation Academy and Airports	**7. Other external influences**
2023/6/5	**8. History of the preparation of the description**
9. Objectives of the Academic Program	

1 - Maintaining and improving the quality of curricula.

2- Modernization and opening laboratories by providing them with the latest technical devices 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.

5- . Knowledge production through:

- Carrying out distinguished theoretical and applied research.
- Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines.
- Seeking to increase research funding sources through publication in international engineering journals

6- Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and develop the relationship between students and teachers.

10. Required Program Outcomes and Teaching, Learning and Assessment Methods

A-A cognitive objectives.
A1- The ability to apply knowledge in mathematics, science and engineering.
A2- Understanding the professional and ethical responsibilities of the right to specialization.
A3- The ability to evaluate the outputs of the course with the teaching staff, industrial practitioners and professionals, 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.

B - Skills objectives of the program:
B1 - Ability to work and integrate into multidisciplinary teams.
B2 - The ability to design and conduct experiments as well as analyze and interpret data.
B3 - The ability to use modern technologies, skills and engineering tools to practice engineering

C- Emotional and value goals: .A1The student should be motivated to solve the assignment C.2 The student should seriously discuss the lecture C.3 Interaction as groups with the teacher C.4 Conclusion
Teaching and learning methods
Methods of learning and teaching: lecture, workshop, laboratory, vocational teaching, summer training.
Evaluation methods
Evaluation methods: oral tests, written tests, semester exams, final exams, daily evaluation.

d. General and qualifying skills transferred (other skills related to employability and personal development). D1- The ability to manage and work on the ground and air stadium equipment for aircraft. D2- The ability to mechanical design using the latest three-dimensional design and simulation programs, which is a process to meet the needs required within the field of specialization in a realistic framework in which environmental, economic, social, political and health restrictions are imposed.... D3- The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults of aircraft systems. D4- Ability to adapt to similar disciplines (telecommunications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies ...)			
11.Program Architecture			
Credit Hours			Grades

practical	theoretical	Course Name	Course or Course Code	
1	3	**Electrical Engineering**	**CREQ141**	**First grade**
3	1	**Engineering Drawing**	**CREQ142**	
--	2	**Human Rights**	**UREQ161**	
--	3	**Engineering Mathematics I**	**MATH151**	
--	4	**Engineering Mechanics I**	**ANTE112**	
--	3	**Material properties**	**ANTE111**	
2	2	**ThermodynamicsI**	**ANTE121**	
2	1	**ProgrammingI**	**CREQ143**	
6	--	**Engineering Workshops**	**CREQ144**	
Credit Hours		Course Name	Course or Course Code	Grades
practical	theoretical			
2	2	**Fluid Mechanics**	**ANTE223**	
1	3	**Manufacturing methods**	**ANTE215**	
--	3	**Engineering Mathematics II**	**MATH252**	

3	1	**Engineering Drawing**	**CREQ246**	**Second grade**
--	4	**Engineering Mechanics II**	**ANTE213**	
2	3	**Material resistance**	**ANTE214**	
--	3	**Aviation theory**	**ANTE231**	
2	2	**Dynamic Thermal II**	**ANTE222**	
2	1	**Programming II**	**CREQ245**	
Credit Hours		Course Name	Course or Course Code	Grades
practical	theoretical			
2	2	**Aerodynamics**	**ANTE324**	**Third grade**
2	2	**Aircraft Electrical & Devices**	**ANTE332**	
3	2	**Engineering Designs**	**ANTE316**	
--	3	**Numerical and engineering analyses**	**CREQ347**	
2	2	**Heat transfer**	**ANTE325**	
--	2	**Industrial Engineering**	**CREQ348**	
2	2	**Machine theory**	**ANTE317**	
2	2	**Aircraft engines**	**ANTE333**	
1	3	**Gas dynamics**	**ANTE326**	
Credit Hours				Grades

practical	theoretical	Course Name	Course or Course Code	
1	**3**	**Aircraft Design**	**ANTE436**	**Fourth grade**
1	**3**	**Jet Propulsion Aircraft Engines**	**ANTE435**	
1	**3**	**Aircraft Stability Control**	**ANTE438**	
1	**3**	**Airframes**	**ANTE434**	
2	**2**	**Aircraft Maintenance Systems**	**ANTE439**	
3	**--**	**Computer Engineering**	**CREQ449**	
1	**3**	**Automatic control**	**ANTE418**	
2	**2**	**Aircraft vibration**	**ANTE437**	
4	**--**	**Final Project**	**CREQ4410**	

12. Planning for personal development

Faculty members consist of a sufficient number, noting that efficiency has a role to cover all curricula for the areas of the program, in addition to that there is a capacity to manage the college sufficiently to accommodate levels of interaction and student guidance, counseling, university, vocational and developmental service activities, and interaction with industrial practitioners and professionals as well as employers.

13. Admission criterion (setting regulations related to admission to a college or institute)
The desire of students to apply for admission to the Department of Aviation Technology Engineering is the standard currently in force in the Technical College of Engineering at Al-Farahidi University by applying on the Ministry's website .
14. The most important sources of information about the program

Curriculum Skills Outline																		
Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.																		
Learning outcomes required from the program																		
General and qualifying skills transferred (other skills related to employability and personal development)				Emotional and value goals				Program Skills Objectives				Cognitive goals				fundamental Or optional	Course Name	Course Code	Year/ Level
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
	√	√	√			√	√				√	√	√	√	√		Electrical Engineering	CREQ141	First Year
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Engineering Drawing	CREQ142	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Human Rights	UREQ161	
	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Engineering Mathematics I	MATH151	
√	√	√	√			√	√			√	√	√	√	√	√		Engineering Mechanics I	ANTE112	
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Material properties	ANTE111	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		ThermodynamicsI	ANTE121	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		ProgrammingI	CREQ143	

Curriculum Skills Outline																			
Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.																			
Learning outcomes required from the program																			
General and qualifying skills transferred (other skills related to employability and personal development)				Emotional and value goals				Program Skills Objectives				Cognitive goals				fundamental Or optional	Course Name	Course Code	Year/Level
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
	√	√	√			√	√				√	√	√	√	√		Fluid Mechanics	ANTE223	Second Year
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Manufacturing methods	ANTE215	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Engineering Mathematics II	MATH252	
	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Engineering Drawing	CREQ246	
√	√	√	√			√	√			√	√	√	√	√	√		Engineering Mechanics II	ANTE213	
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Material resistance	ANTE214	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Aviation theory	ANTE231	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Dynamic Thermal II	ANTE222	

Curriculum Skills Outline																			
Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.																			
Learning outcomes required from the program																			
General and qualifying skills transferred (other skills related to employability and personal development)				Emotional and value goals				Program Skills Objectives				Cognitive goals				fundamental Or optional	Course Name	Course Code	Year/Level
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
	√	√	√			√	√				√	√	√	√	√		Aerodynamics	ANTE324	Third Year
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Aircraft Electrical & Devices	ANTE332	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Engineering Designs	ANTE316	
	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Numerical and engineering analyses	CREQ347	
√	√	√	√			√	√			√	√	√	√	√	√		Heat transfer	ANTE325	
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Industrial Engineering	CREQ348	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Machine theory	ANTE317	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Aircraft engines	ANTE333	

Curriculum Skills Outline																		
Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.																		
Learning outcomes required from the program																		
General and qualifying skills transferred (other skills related to employability and personal development)				Emotional and value goals				Program Skills Objectives				Cognitive goals				fundamental Or optional	Course Name	Course Code	Year/Level
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
	√	√	√			√	√				√	√	√	√	√		Aircraft Design	ANTE436	Fourth Year
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Jet Propulsion Aircraft Engines	ANTE435	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Aircraft Stability Control	ANTE438	
	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Airframes	ANTE434	
√	√	√	√			√	√			√	√	√	√	√	√		Aircraft Maintenance Systems	ANTE439	
√	√	√	√		√	√	√	√	√	√	√	√	√	√	√		Computer Engineering	CREQ449	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Automatic control	ANTE418	

√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√		**Aircraft vibration**	**ANTE437**	

Course Description Form

Course Description

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

Farahidi University	1. Educational institution
Technical College of Engineering / Department of Aeronautical Engineering Technologies	2. Scientific Department / Center
Physics AFU12015	3. Course Name/Code
Came	4. Available Attendance Forms
First Semester / First Year	5. Semester / Year
150 hours	6. Number of Credit Hours (Total)
14/9/2023	7. The history of preparation of this description
8. Course Objectives	
1. Developing the basic concept of theoretical and engineering materials.	
2. Understand the nature of the material, the states and the change between phases.	
3. Build a basic understanding of mechanical engineering.	

4. Understand the basis of heat mechanics and fluid mechanics.

5. Understand the rules of geometric optics.

6. Understand the basics of waves.

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

A- Knowledge Objectives

A1- Knowing the difference between the structure of materials and the physical and chemical properties of the material.

A2- The ability to analyze mechanical systems and calculate the equivalent forces of the system.

A3- Scientifically clarify the behavior of heat for different systems.

A4- Discuss the system of fluid joints and force pressure.

A5- Explanation of the dynamic system and friction.

A6- Knowledge of the ideal gas law.

B - Course skills objectives

1- Providing the student with the necessary skills to learn the method of scientific thinking that helps him to obtain scientific knowledge and transform this into a behavior followed in solving scientific problems.

2- Providing the student with the skills that help him understand and interpret natural phenomena and practical applications related to sound and wave movement.

Teaching and learning methods

1. Encourage the student to contribute to classroom activities.
2. Encourage the student to expand their intellectual skills.
3. Interactive activities and exercises in the classroom.

Evaluation methods

1. Evaluate attendance and interaction within the class.
2. Conducting continuous tests for the prescribed material.
3. Evaluation of extra-curricular duties.

C- Emotional and value goals

C1- Expanding the ability to understand the engineering field and develop it after graduation.

C2- Focusing on the student's listening in the classroom to the teacher and his keenness on extracurricular duties.

C3- Increasing the student's self-confidence and information in the engineering field

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

1. Reading skills on books and recent research related to sound and wave motion

. D-2 The skill of using the Internet in teaching and learning.

D-3 The skill of writing scientific reports.

10. Course Structure

Evaluation method	Method of education	Required Learning Outcomes	Unit / Subject Name	Hours	The week
Daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation	**Direct teaching, learning through exercise sets and questions specific to the subject.**	**As stated in paragraph 9.a**	Nature of matter: chemical elements, structure of the atom and molecule, chemical components, states of matter.	3	First
			Static forces, moment and resultants, vectors, center of gravity.	3	Second

during the practical part.			Elements of the theory of tension, elasticity and tension.	3	Third
			Gas and liquid: pressure and flotation in liquids. Fluid dynamics.	3	Fourth
			Effect of compression on liquids: static pressure, dynamic and total pressure: Prelonis' theory, Venturi's theory.	3	V
			Linear motion: uniform motion in a straight line, motion under constant acceleration (motion under gravity); rotational motion: uniform circular motion (centrifugal forces/attraction); cyclical motion: pendulum motion; simple theory of	3	Sixth

			vibration, harmonics and resonance. Ratio of speed, mechanical advantage and efficiency.		
			Dynamics (a) collective force, inertia, work, energy, energy (potential, kinetic and gross energy), heat, efficiency; (b) momentum, momentum conservation;	3	Seventh
			Principles of gyroscope. Friction: nature and effects, coefficient of friction (rolling resistance)	3	Eighth
			Temperature: thermometers and temperature gauges: Celsius, Fahrenheit, Kelvin; definition of heat. (b) Heat capacity, specific heat; heat transfer: convection, radiation and	3	Ninth

			conductivity. volumetric expansion of the first and second law of thermodynamics;		
			Gases: the laws of ideal gases; specific heat at constant volume and constant pressure; work done by gas expansion;	3	X
			isothermal, expansion and adodynamic pressure, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; latent heat of fusion and evaporation, thermal energy, combustion heat.	3	Eleventh
			Nature of light The speed of light Laws of reflection and refraction:	3	Twelfth

			reflection on flat surfaces		
			Reflection by spherical mirrors, refraction, lenses; optical fibers.	3	Thirteenth
			Wave motion: mechanical waves, sinusoidal motion, interference phenomenon, steady waves	3	Fourteenth
			Sound: Speed of sound, sound production, intensity, pitch and quality, Doppler effect.	3	Fifteenth
			Preparatory week before the final exam	3	Sixteenth

11. Infrastructure	
Physics for Scientists & Engineers & Modern Physics, 9th Ed by Serway, Jewett	1- Required textbooks
Fundamentals of Physics Textbook David Halliday	2- Main references (sources)

12. Course Development Plan

Prerequisites	Graduate of the preparatory stage, scientific branch
Minimum number of students	It's open
The largest number of students	It's open

Course Description Form (Gas Dynamics)

Course Description

The course aims to introduce the student to the basic principles of gas dynamics and calculate the effect of compressibility on the types of flows during the constant-section and variable ducts, as well as the isontropic flows during the obtuse and obtuse section, and study the types of vertical and oblique air shocks and how to employ and apply them in the field of aviation and design of different types of air tunnels.	
Ministry of Higher Education and Scientific Research - Al-Farahidi University	**1. Educational institution**
Technical College of Engineering - Department of Aircraft Technology Engineering	**2. University Department / Center**
(Dynamics of gases)	**3. Course Name/Code**
	4. Programs in which he enters
Full time	**5. Available Attendance Forms**
annual	**6. Semester / Year**
Theoretical: 2 hours/week Practical:2hr/week Total: 120 hours/year	**7. Number of Credit Hours (Total)**
Sep-2023	**8. The history of preparation of this description**
9. Course Objectives:	
1. Train the student to acquire the necessary skill to understand and understand the basic and technical principles of the use and employment of gas dynamics in the field of aerospace engineering technology.	
2. Training the student to acquire the necessary skill in the use of basic laws for the purpose of analyzing practical problems in the field of gas dynamics and finding appropriate solutions to them.	
3. Training the student on how to use measuring devices whose principle depends on the applications of basic equations in the field of gas dynamics and their use in the field of aerospace engineering technologies.	

10. Learning outcomes and teaching, learning and assessment methods

A- Knowledge and understanding:

A1- Preparing technical engineering cadres to secure the development requirements of manpower with technical competencies in dealing with gas dynamics and adapting to modern technologies and labor market indicators.

A2- Enabling the student to know and understand the application and use of the basic laws of the field of gas dynamics and their applications in aerospace engineering technologies.

A3- Enabling the student on how to use gas dynamics and employ them in the field of aeronautical technology engineering .

A4- Enable the student to know and understand the forms of aviation and calculate the performance of aircraft.

B- Subject-specific skills:

B1 – Discussion and dialogue between the student and the teacher

B2 – Direct questions and answers

B3 – Self-learning through discussion of the material

Teaching and learning methods: direct teaching, discussion to apply the theoretical part in practice, learning through exercise groups and questions for the subject and preparing small projects.

Evaluation methods: daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.

C- Thinking skills

C-1 The skill of collecting data and information.

C-2 The skill of classifying , organizing and evaluating information.

C-3 The skill ofcomparing things, ideas and events according to similarities and differences.

C-4 Skill in writing reports and research.

C-5 The skill of analysis and detection of the relationship between causes and effects.

C-6 Critical Thinking Skill

Teaching and learning methods

(Lectures, Discussion)

Evaluation methods

Evaluation methods: daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.

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

11. Course Structure					
Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
Daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.	Direct teaching, learning through exercise sets and questions specific to the subject.	1- Introduction to compressive flows.	As stated in paragraph 10.a.	6	1-2
		2- Basic equations of compression flows, conservation equation of mass, energy, momentum, as well as Newton's equations of motion and thermodynamic equations.		6	3-4
		3- Study of wave propagation and wave composition.		6	6-5
		4- Isotropic flow of bladder gases through the variable section stream, and the stagnation relationship.		6	7-8
		5- Infrasound and ultrasound flow through the course of the variable section, the isentropic tables.		6	9-10
		6- Isotropic flow of bladder gases through the duct of the Nozzle.		6	11-12
		7- Isotropic flow of bladder gases through a variable syllabic stream that is obtuse.		6	13-14
		8- Propulsion performance calculations for rocket engines		6	15-16
		9- Static vertical shock - Part I, change of entropy section area and velocity.		6	17-18
		10- Vertical trauma in a mutapart-obtuse duct.		6	19-20
		11- Ultrasonic diffuser - obtuse		6	21-22
		12. Ultrasonic wind tunnel.		6	24-23
		13. Moving vertical shock.		6	26-25
		14- Oblique shock, basic equations of flow during shock.		6	27-28
		15- Reflections of the oblique shock wave.		6	29-30

12. Infrastructure	
	12- Infrastructure:
Text Books: **-Introduction to Gas Dynamics E.Rafkrishnan**	**Required readings:** ▪ **Basic texts** ▪ **Course Books** ▪ **Other**
	Special requirements (e.g. workshops, periodicals, software and websites)

	Social services (e.g. guest lectures, vocational training and field studies)

13. Acceptance	
Graduate of the preparatory stage, scientific branch	**Prerequisites**
It's open	**Minimum number of students**
It's open	**The largest number of students**

Course Description Form (Jet Propulsion / Fourth Stage)

Course Description

The course aims to introduce the student to the basic principles of jet propulsion material for aircraft and missiles and to study the various engine parts such as air intake, compressor, combustion chamber, turbine and jet tube in terms of performance variables, calculation of propulsion, speed and efficiency for all flight situations.

Ministry of Higher Education and Scientific Research - Al-Farahidi University	**1. Educational institution**
Technical College of Engineering - Department of Aircraft Technology Engineering	**2. University Department / Center**
Jet Propulsion	**3. Course Name/Code**
	4. Programs in which he enters
Full time	**5. Available Attendance Forms**
annual	**6. Semester / Year**
Theoretical: 2 hours / week practical 2 / hour per week Discussion:1hr/week Total: 240 hours/year	**7. Number of Credit Hours (Total)**
Sep-2023	**8. The history of preparation of this description**
9. Course Objectives:	
1. Train the student to acquire the necessary skill to understand and understand the basic and technical principles of the use and employment of jet propulsion science in the field of aeronautical technology engineering.	
2. Training the student to acquire the necessary skill in the use of basic laws for the purpose of analyzing practical problems in the field of jet propulsion and finding appropriate solutions to them.	
3. Training the student on how to use measuring devices whose principle depends on the applications of basic equations in the field of jet propulsion engines and their use in the field of aeronautical engineering technologies.	

10. Learning outcomes and teaching, learning and assessment methods

A- Knowledge and understanding:

A1- Preparing engineering technical cadres to secure the development requirements of manpower with technical competencies in dealing with jet payment and adapting to modern technologies and labor market indicators.

A2- Enable the student to know and understand the application and use of the basic laws of the field of jet propulsion and its applications in the engineering of aeronautical technologies.

A3- Enabling the student on how to use aircraft performance and employ them in the field of aviation technology engineering .

A4- Enabling the student to know and understand the theory of jet propulsion in aircraft and missile engines.

B- Subject-specific skills:

B1 – Discussion and dialogue between the student and the teacher

B2 – Direct questions and answers

B3 – Self-learning through discussion of the material

Teaching and learning methods: direct teaching, discussion to apply the theoretical part in practice, learning through exercise groups and questions for the subject and preparing small projects.

Evaluation methods: daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.

C- Thinking skills

C-1 The skill of collecting data and information.

C-2 The skill of classifying , organizing and evaluating information.

C-3 The skill ofcomparing things, ideas and events according to similarities and differences.

C-4 Skill in writing reports and research.

C-5 The skill of analysis and detection of the relationship between causes and effects.

C-6 Critical Thinking Skill

Teaching and learning methods

(Lectures, Discussion)

Evaluation methods

Evaluation methods: daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.

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

11. Course Structure					
Evaluation method	**Method of education**	**Name of the unit/course or topic**	**Required Learning Outcomes**	**Hours**	**The week**
Daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.	**Direct teaching, learning through exercise sets and questions specific to the subject.**	**1** - Classification of propulsion systems - The thrust equation	**As stated in paragraph 10.a.**	**3**	**1**
		- Engine performance and A/C range2		**3**	**3**
		Theory of jet propulsion - Turbo jet engine - Turbo fan engine - Turbo prop engine - Turbo shaft engine - Ram jet engine		**3**	**4**
		Design of centrifugal compressors - Impeller design - Diffuser design - Volute design		**3**	**5**
		Design of axial flow compressors - Compressor aerodynamics - Repeating stage , repeating raw - Mean line design - Axial variation - Radial variation - Mechanical design		**3**	**6**
		Compressors technology - Materials - Manufacturing technology - Balancing		**3**	**7**
		Design of combustion system - The process (ignition, stability, length scaling, diffusers) - After burner design - Flame holding - Fuel injection		**3**	**8**
		Combustion chambers technology - Materials - Manufacturing technology		**3**	**9**
		Design of axial flow turbines - Turbine aerodynamics - Zero exit swirl, constant axial velocity		**3**	**10**
		- Mean line stage design - Other design considerations		**3**	**11**
		Mechanical design of axial flow turbines - Rotor airfoil centrifugal stresses - Rim web thickness - Disc of uniform stress - Disc thermal stresses - Airfoil aspect ratio		**3**	**12**
		Turbines technology - Materials - Manufacturing technology - Balancing		**3**	**13**
		Design of inlets - Subsonic inlets - Supersonic inlets		**3**	**14**
		Design of nozzles - Convergent nozzle - Convergent-divergent nozzle - Thrust reversing and thrust vectoring - Nozzle coefficients		**3**	**15**
		Inlets and nozzles technology - Materials - Manufacturing technology		**3**	**16-18**
		Accessory drives - Construction of gearboxes and drives - Engine power off takes - Engine oil system		**3**	**19-22**
		Engine control systems - Engine/Airframe interfaces - Control system		**3**	**23-25**
		Engine control systems - Engine/Airframe interfaces - Control system		**3**	**26-28**
		20 Engine starting - Fuel/Ignition control - Engine rotation - Throttle levers - Starting sequence		**3**	**29**
		Turbine engine inspection and maintenance - Inlet and compressor section - Combustion section - Turbine section - Exhaust section		**3**	**30**

13. Acceptance	
Graduate of the preparatory stage, scientific branch	Prerequisites
It's open	Minimum number of students
It's open	The largest number of students

	12- Infrastructure:
Text Books: -Gas turbine and jet propulsion Ahmed Al-sayed -Element of Jet Propulsion Jack Mattengley	Required readings: ▪ Basic texts ▪ Course Books ▪ Other
	Special requirements (e.g. workshops, periodicals, software and websites)
	Social services (e.g. guest lectures, vocational training and field studies)

Course Description Form (Engineering Drawing)

Course Description

The course aims to introduce the student to the basic principles of engineering drawing through learning on geometric shapes and drawing them using the computer within the program (AutoCad), which leads to the design of all parts of aircraft.

Ministry of Higher Education and Scientific Research - Al-Farahidi University	**1. Educational institution**
Technical College of Engineering - Department of Aircraft Technology Engineering	**2. University Department / Center**
Engineering Drawing	**3. Course Name/Code**
Bologna Program	**4. Programs in which he enters**
Full time	**5. Available Attendance Forms**
Quarterly	**6. Semester / Year**
Practical:6hrs/week **Theoretical: 3 hours/week** **Total: 135hrs/class**	**7. Number of Credit Hours (Total)**
Sep-2023	**8. The history of preparation of this description**
9. Course Objectives:	
1. Train the student to acquire the necessary skill to realize and understand the basic and technical principles of using and employing engineering drawing in the field of aeronautical engineering technologies.	
2. Training the student to acquire the necessary skill in the use of the engineering drawing program (AutoCad) to be used in the design of aircraft parts.	

10. Learning outcomes and teaching, learning and assessment methods

A- Knowledge and understanding:

A1- Preparing engineering technical cadres to secure the development requirements of manpower with technical competencies in dealing with engineering drawing using computers and adapting to modern engineering drawing programs and labor market indicators.

A2- Enabling the student to know and use the basics of drawing using the computer through the AutoCAD program and its applications in the engineering of aeronautical techniques.

A3- Enabling the student on how to use the AutoCAD program well and employ him in the field of aeronautical technology engineering.

A4- Enable the student to know and understand the shapes and parts of aircraft to be drawn in the AutoCAD program in a professional manner

B- Subject-specific skills:

B1 – Discussion and dialogue between the student and the teacher

B2 – Direct questions and answers

B3 – Self-learning through discussion of the material

Teaching and learning methods: direct teaching, discussion to apply the theoretical part in practice, learning through exercise groups and questions for the subject and preparing small projects.

Assessment methods: daily exams, student activity in the classroom through discussion, solving computer examples, semester and final exams, direct evaluation during continuous practical application.

C- Thinking skills

C-1 The skill of collecting data and information.

C-2 The skill of classifying , organizing and evaluating information.

C-3 The skill ofcomparing things, ideas and events according to similarities and differences.

C-4 Skill in writing reports and research.

C-5 The skill of analysis and detection of the relationship between causes and effects.

C-6 Critical Thinking Skill

Teaching and learning methods

(Lectures, Discussion)

Evaluation methods

Assessment methods: daily exams, student activity in the classroom through discussion, solving computer examples . Semester and final exams, direct assessment during the practical part.

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

11. Course Structure					
Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
Daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.	Direct teaching, learning through exercise sets and questions specific to the subject.	1- Introduction to Engineering Drawings	As stated in paragraph 10.a.	4	1
		2- File management		4	2
		3- AutoCad function keys		4	3
		4- Basics of engineering drawing		4	4
		5- Engineering drawing tools		4	5
		6- Engineering drawing modification tools		4	6
		7- Controls in the display of the drawing or hologram		4	7
		8- Explanation and clarification tools for each part of the drawing		4	8
		9- Isometric drawings and how to draw them		4	9
		10- Dimensions and how to put them on drawings and models		4	10
		11- Manage graphics layers at the same time		4	11

12. Acceptance	
Graduate of the preparatory stage, scientific branch	Prerequisites
It's open	Minimum number of students
It's open	The largest number of students

Course Description Form (Aviation Theory)

Course Description

The course aims to introduce the student to the basic principles of flight theory for fixed-wing aircraft and rotary-wing aircraft, calculation of aerodynamic forces and moments that arise from the movement of aircraft in the atmosphere, study of different flight situations, calculation of the performance of the aircraft in stable horizontal flight, as well as in the case of climbing and descending, and performance calculations in the case of take-off and landing.	
Ministry of Higher Education and Scientific Research - Al-Farahidi University	**1. Educational institution**
Technical College of Engineering - Department of Aircraft Technology Engineering	**2. University Department / Center**
Aviation theory	**3. Course Name/Code**
	4. Programs in which he enters
Full time	**5. Available Attendance Forms**
annual	**6. Semester / Year**
Theoretical: 2 hours/week **Discussion:1hr/week** **Total: 120 hours/year**	**7. Number of Credit Hours (Total)**
Sep-2023	**8. The history of preparation of this description**
9. Course Objectives:	
1. Train the student to acquire the necessary skill to realize and understand the basic and technical principles of the use and employment of aviation theory in the field of aviation technology engineering.	
2. Training the student to acquire the necessary skill in the use of basic laws for the purpose of analyzing practical problems in the field of aviation theory and finding appropriate solutions to them.	
3. Training the student on how to use measuring devices whose principle depends on the applications of basic equations in the field of aviation theory and their use in the field of aviation technology engineering.	

10. Learning outcomes and teaching, learning and assessment methods

A- Knowledge and understanding:

A1- Preparing engineering technical cadres to secure the development requirements of manpower with technical competencies in dealing with aviation theory and adapting to modern technologies and labor market indicators.

A2- Enable the student to know and understand the application and use of the basic laws of the field of aviation theory and its applications in the engineering of aviation technologies.

A3- Enabling the student on how to use aircraft performance and employ them in the field of aviation technology engineering .

A4- Enable the student to know and understand the forms of aviation and calculate the performance of aircraft.

B- Subject-specific skills:

B1 – Discussion and dialogue between the student and the teacher

B2 – Direct questions and answers

B3 – Self-learning through discussion of the material

Teaching and learning methods: direct teaching, discussion to apply the theoretical part in practice, learning through exercise groups and questions for the subject and preparing small projects.

Evaluation methods: daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.

C- Thinking skills

C-1 The skill of collecting data and information.

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C-6 Critical Thinking Skill

Teaching and learning methods

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Evaluation methods: daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.

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

11. Course Structure					
Evaluation method	**Method of education**	**Name of the unit/course or topic**	**Required Learning Outcomes**	**Hours**	**The week**
Daily exams, student activity in the classroom through discussion, solving examples on the board, semester and final exams, direct evaluation during the practical part.	Direct teaching, learning through exercise sets and questions specific to the subject.	1. Introduction, atmosphere, physical properties of gases in the atmosphere	As stated in paragraph 10.a.	3	1
		2- Aerodynamic forces and moments that arise on the aircraft during flight.		3	2
		3- The basic axles system of the aircraft, types of moments and methods of performance and control.		3	3
		4- Lift, lifting coefficient, lift change with attack angles, lifting schemes.		3	4
		5- Braking,methods of braking calculations at subsonic and ultrasonic speed.		3	5
		6Types of onboard braking,parasitic braking, inductive braking and shock braking		3	6
		7—Collapse, wing collapse speed, collapse control, high-lift winglets.		3	7
		8- Wings for high speed (ultrasound) and slow speed (subsonic speed), types of updated wings.		3	8
		9- Aerodynamic forces in stable horizontal flight, lifting, braking, thrust, gravity.		3	9
		10. Horizontal flight performance, ideal horizontal flight, flight at a steady and stable level.		3	10
		11- Types of wing load, straight wing, retracting wing.		3	11
		12- Accounts payable, payment change with Mach number or speed, change with altitude change.		3	12
		13. Power calculations,power change with altitude speed.		3	13
		14- Climbing, climbing performance, climbing rate, stable climbing.		3	14
		15- Paragliding, paragliding performance without capacity, paragliding change during landing.		3	15
		16. The range and duration of the aircraft's airborne stay for piston aircraft		3	16

		17. Range and duration of airborne aircraft for jet aircraft		3	17
		18- Take-off, calculations of take-off range and staircase time during take-off		3	18
		19- - Landing, calculations of the extent of descent and the time of stairs during the descent.		3	19
		20- Acceleration during climbing, unstable flight		3	20
		21. Calculations of the performance of the stable and fixed rotation of the aircraft.		3	21
12. Infrastructure		22. Aerodynamic forces of rotary-wing aircraft.		3	22
		23. Aerodynamicc helicopter		3	23
		24- The required power of the helicopter, propulsion, thrust change with altitude and speed.		3	24
		25-capacity available.introduction, change the available capacity with altitude and speed.		3	25
		26-flight range,maximum speed and range.		3	26-27
		27- Climb range, maneuver in flight		3	28-29
		28- Ideal speed, best climb rate, ideal speed.		3	30

12- Infrastructure:

Text Books:

-Introduction to Flight by John D and Anderson.

-Mechanics of Flight, 11th Edition by A.C. Kermode..

Required readings:

- Basic texts
- Course Books
- Other

Special requirements (e.g. workshops, periodicals, software and websites)

Social services (e.g. guest lectures, vocational training and field studies)

13. Acceptance	
Graduate of the preparatory stage, scientific branch	Prerequisites
It's open	Minimum number of students
It's open	The largest number of students