

# Curriculum for Associate Degree in Aircraft Engines Specialization

The curriculum of associate degree in “Aircraft Engines” specialization consists of (72 credit hours) as follows:

Serial No.	Requirements	Credit Hours
First	University Requirements	12
Second	Engineering Program Requirements	17
Third	Specialization Requirements	43
<b>Total</b>		<b>72</b>



The study plan of associate degree  
in  
Aircraft Engines

**First:** University requirements (12 credit hours) as follows:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
22001101	Arabic Language	3	3	-	
22002101	English Language	3	3	-	
21901100	Islamic Culture	3	3	-	
21702101	Computer Skills	3	1	4	
<b>Total</b>		<b>12</b>	<b>10</b>	<b>4</b>	

**Second:** Engineering Program requirements (17 credit hours) as follows:

Course No	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20201111	Engineering Workshops	1	-	3	-
20204111	AutoCAD	2	-	6	-
20506111	Occupational Safety	2	2	-	-
21301111	General Mathematics	3	2	2	-
20605111	General Physics	3	2	2	-
21302112	General Physics Laboratory	1	-	3	-
21702111	Communication Skills and Technical Writing	3	2	2	22002101
20201121	Engineering Materials	2	2	-	-
<b>Total</b>		<b>17</b>	<b>10</b>	<b>18</b>	

Third: Specialization Requirements (43 credit hours) as follows:

Course No	Course Title	Credit Hours	Weekly Contact Hours		Pre-req
			Theoretical	Practical	
20302111	Fundamental of Electricity	3	3	0	21302111*
20302112	Fundamental of Electricity lab	1	0	3	20302111*
20604131	Thermodynamics	3	3	0	
20605111	Maintenance Regulations and Airfield Safety	2	2	0	-
20604141	Aircraft Servicing Tools and Refurbishment	2	2	0	
20604142	Aircraft Servicing Tools and Refurbishment Workshops	1	0	3	20604141*
20604111	Principles of Flight	2	2	0	
20604222	Engine Auxiliary Systems	3	3	0	
20604223	Aircraft Engines Electrical Systems & Instruments Workshops	1	0	3	
20604151	Aircraft Materials & Treatment	2	2	0	
20604224	Reciprocating Engines	3	3	0	
20604225	Reciprocating Engines Workshops	1	0	3	
20604226	Gas Turbine Engines	3	3	0	20604131
20604227	Gas Turbine Engines Workshops	2	0	6	20604226*
20604228	Engine Ignition Systems	2	2	0	
20604229	Engine Fuel Systems	2	2	0	
20604261	Aircraft Propellers	3	3	0	
20604262	Aircraft Propellers Workshops	1	0	3	20604261*
20604291	Training**	3	0		-
20604292	Project	3	0		-
<b>Total</b>		<b>43</b>	<b>30</b>	<b>21</b>	

\*-Co-requisite

\*\* Equivalent to 280 training hours



❖ تطبيق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

### Guiding Plan

First Year					
First Semester			Second Semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
20604141	Aircraft Servicing Tools and Refurbishment	2	22001101	Arabic Language	3
20604142	Aircraft Servicing Tools and Refurbishment Workshops	1	20604151	Aircraft Materials & Treatment	2
22002101	English Language	3	20204111	AutoCAD	2
21702101	Computer Skills	3	21702111	Communication Skills and Technical Writing	3
21302111	General Physics	3	20604131	Thermodynamics	3
21302112	General Physics Lab.	1	20506111	Occupational Safety	2
21301111	General Mathematics	3	20604111	Principles of Flight	2
20605111	Maintenance Regulations and Aircraft Safety	2	20201111	Engineering Workshops	1
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>18</b>

Second Year					
Third Semester			Fourth Semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
20604226	Gas Turbine Engines	3	20604229	Engine Fuel Systems	2
20604227	Gas Turbine Engines Workshops	2	20604261	Aircraft Propellers	3
20604224	Reciprocating Engines	3	20604262	Aircraft Propellers Workshops	1
20604225	Reciprocating Engines Workshops	1	20604291	Training	3
20201121	Engineering Materials	2	20604292	Project	3
21901100	Islamic Culture	3	20604222	Engine Auxiliary Systems	3
20302111	Fundamental of Electricity	3	20604223	Aircraft Engines Electrical Systems & Instruments Workshops	1
20302112	Fundamental of Electricity lab	1	20604228	Engine Ignition Systems	2
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>18</b>

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

## Brief Course Description

## University Requirements

Course Title	Course No	Credit Hours ( Theoretical /Practical)
--------------	-----------	---

Arabic Language	22001101	3 (3,0)
-----------------	----------	---------

تتضمن هذه المادة مجموعة من المهارات اللغوية بمستوياتها وأنظمتها المختلفة: الصوتية، والصرفية، والنحوية، والبلاغية، والمعجمية، والتعبيرية، وتشتمل نماذج من النصوص المشرقة: قرآنية، وشعرية، وقصصية، من بينها نماذج من الأدب الأردني؛ يتوخى من قراءتها وتدوقها وتحليلها تحليلاً أدبياً؛ تنمية الذوق الجمالي لدى الطلاب الدارسين.

English Language	22002101	3 (3,0)
------------------	----------	---------

English 1 is a general course. It covers the syllabuses of listening, speaking, reading, writing, pronunciation and grammar, which are provided in a communicative context. The course is designed for foreign learners of the English language, who have had more than one year of English language study. The extension part would be dealt with in the class situation following the individual differences.

Islamic Culture	21901100	3 (3,0)
-----------------	----------	---------

1. تعريف الثقافة الإسلامية وبيان معانيها وموضوعاتها والنظم المتعلقة بها - وظائفها وأهدافها.
2. مصادر ومقومات الثقافة الإسلامية والأركان والأسس التي تقوم عليها.
3. خصائص الثقافة الإسلامية.
4. الإسلام والعلم، والعلاقة بين العلم والإيمان
5. التحديات التي تواجه الثقافة الإسلامية.
6. رد الشبهات التي تثار حول الإسلام.
7. الأخلاق الإسلامية والآداب الشرعية في إطار الثقافة الإسلامية.
8. النظم الإسلامية.

Computer Skills	21702101	3 (1-4)
-----------------	----------	---------

An introduction to computing and the broad field of information technology is given. Topics covered include the basic structure of digital computer system, microcomputer, operating systems, application software, data communication and networks, and the internet. Hands-on learning emphasizes Windows XP, MS-office2000, and the internet.

**Engineering Program requirements**

<b>Engineering Workshops</b>	<b>20201111</b>	<b>1 (0,3)</b>
Development of basic manual skills in Mechanical and Electrical works. Use of manual tools and measuring devices. Hand filing, welding, metal cutting and forming. Electrical wiring.		
<b>AutoCAD</b>	<b>20204111</b>	<b>2 (0,6)</b>
Introduction to AutoCAD, application of AutoCAD, commands, geometric entities. Geometric construction. Dimensioning, free –hand sketching, object representation, orthographic drawing and projections.		
<b>Occupational safety</b>	<b>20506111</b>	<b>2 (2,0)</b>
Role of technicians in economic development First aid accident prevention. Protective devices and equipment. Industrial safety standards. Nature of fire hazards. Sand fire regulations. Physiological effects of electrical shock on human body. First aid and treatment for the effects of electric shock. Rules of spare and chemicals storage and handing.		
<b>Communication Skills and Technical Writing</b>	<b>21702111</b>	<b>3 (2,2)</b>
The main goal of this course is to equip the students with the necessary communication skills in everyday life & work situations and improve their abilities in technical writing to meet market needs. For this course, the English language is the language of teaching & the means of communication for all classroom situations.		
<b>Engineering Materials</b>	<b>20201121</b>	<b>2 (2,0)</b>
Definition of engineering materials. Classification of materials and their properties. Metallic and non-metallic materials. Metals, alloys and composite materials. Conductors, insulators and semiconductors. Mechanical, Magnetic, Thermal and electrical characteristics of materials. Industrial applications of different types of materials.		
<b>General Mathematics</b>	<b>21301111</b>	<b>3 (2,2)</b>
Real numbers coordinate planes, lines, distance and circles. Functions: (operations and graphs on functions), limits, continuity, limits and continuity of trigonometric functions. Exponential and logarithmic functions. Differentiation (techniques of differentiation, chain rule, implicit differentiation). Application of differentiation (increase, decrease, concavity). Graphs of polynomials. Applications: Rols Theorem and Mean-Value Theorem, Integration (by substitution, definite integral, fundamental theorem of Calculus). Application of definite integral (area between two curves, volumes)		
<b>General Physics</b>	<b>21302111</b>	<b>3 (2,2)</b>
Physics and measurement, motion in one dimension, vectors, laws of motion, circular motion, energy and energy transfer, potential energy, linear momentum and collisions, electric fields, Gauss's law, electric potential, capacitance and dielectrics, current and resistance, direct current circuits, magnetic fields, sources of the magnetic field, and Faraday's law of electromagnetic induction.		
<b>General Physics lab</b>	<b>21302112</b>	<b>1 (0,3)</b>
In this course, the student performs thirteen experiments in mechanics and in electricity.		

### Specialization Requirements

<b>Fundamentals of Electricity</b>	<b>20302111</b>	<b>3(3,0)</b>
------------------------------------	-----------------	---------------

The Nature Electricity , Electricity From Chemical Action Current And Voltage And Its Measurements, Ohm's Law In Series, Parallel And Network Resistance, Electric Power, Magnetism ,Magnetism As A Source Of Electricity Magnetism In Meters AC Voltage And Current, Resistance: Inductance And Capacitor In AC Circuits Series AC Circuit, Parallel AC Circuits , Transformers, Ammeter Voltmeter And Ohmmeter ,Test Instrument , DC And AC Generators And Motors, Relays

<b>Fundamentals of Electricity lab</b>	<b>20302112</b>	<b>1(0,3)</b>
--	-----------------	---------------

Batteries, DC circuits, DC measurement, AC circuits, AC measurement, magnetism applications, Motors and Generators.

<b>Thermodynamics</b>	<b>20604131</b>	<b>3(3,0)</b>
-----------------------	-----------------	---------------

Concepts and Definitions, First Law, Second Law. System And Control Volume Analysis. Properties And Behavior Of Pure Substance. Vapor And Air-Standard Power And Refrigeration Cycles. Thermodynamic Relations. Ideal And Real Gases And Generalized Charts. No Reacting Mixtures And Solutions.

<b>Maintenance Regulations and Air Field Safety</b>	<b>20605111</b>	<b>2(2,0)</b>
---	-----------------	---------------

The First Part Handles Those Areas Related To Aircraft Maintenance Concept, The Second Part Deals With The Safety Requirements Associated With Safe Operation Of The Aircraft.

<b>Aircraft Servicing Tools And Refurbishment</b>	<b>20604141</b>	<b>2(2.0)</b>
---	-----------------	---------------

Material Deals With Hand Tools, And Measuring Devices, Safety Wiring, Aircraft Hardware, Aircraft Painting, And Finishing The Welding.

<b>Aircraft Servicing Tools And Refurbishment Workshops</b>	<b>20604142</b>	<b>1(0.3)</b>
---	-----------------	---------------

Material Deals with Hand tools, Remove and install bolts and nuts, Thread cutting, Measurements, Drawing, Painting, Welding.

<b>Principles of Flight</b>	<b>20604111</b>	<b>2(2,0)</b>
-----------------------------	-----------------	---------------

Generic Ideas About The Airplane, Theory Of Flight, Stability Of The Aircraft, Basic Aerodynamics, And Studies Of Rotary-Wing Aircraft.

<b>Engine Auxiliary Systems</b>	<b>20604222</b>	<b>3(3,0)</b>
---------------------------------	-----------------	---------------

Complete Studies In The Following Systems For Both Reciprocating And Jet Engines: Induction, Cooling, Exhaust, Starting, And Lubrication.

<b>Aircraft Engines Electrical Systems &amp; Instruments Workshops</b>	<b>20604223</b>	<b>1(0,3)</b>
Studies The Types Of Reciprocating And Turbine Engine Instruments, Electrical System Components And The Engine Fire Protection System		
<b>Aircraft Materials and Treatment</b>	<b>20604151</b>	<b>2(2,0)</b>
Studies The Properties Of Material Of The Aircraft, Metals Working Processes. Types Of Corrosion; Detection; Treatment; And Prevention.		
<b>Reciprocating Engines</b>	<b>20604224</b>	<b>3(3,0)</b>
It deals with the design, construction, and operating principles of reciprocating engines. Its maintenance, removal, and overhaul. Diesel engine technology.		
<b>Reciprocating Engines Workshops</b>	<b>20604225</b>	<b>1(0,3)</b>
Includes practices on the different types of reciprocating engines where the student can work, assemble and disassemble all the parts, the system, and the subsystems.		
<b>Gas Turbine Engines</b>	<b>20604226</b>	<b>3(3,0)</b>
Design and construction of the jet engine with the operation principles and complete studies in jet engine types, parts, functions, maintenance, operation, inspection, maintenance, troubleshooting, removal, overhaul and engine Run-Up at Test Cells.		
<b>Gas Turbine Engines Workshops</b>	<b>20604227</b>	<b>2(0,6)</b>
Design and construction of complete applications on three different classes of engines; the J85-GE-21B as a pure supersonic jet engine, the T56-A-7B as a turbo-prop engine, and the F100-PW-220E as a turbo-fan engine. With the operation principles, types, parts, functions, maintenance, operation, inspection, troubleshooting, and removal.		
<b>Engine Ignition Systems</b>	<b>20604228</b>	<b>2(2,0)</b>
Complete studies in ignition circuits for reciprocating and gas turbine engines, magnetos with their types, both igniter & spark plugs. It covers all maintenance processes, inspections, installation and removal for both types of ignition circuits.		
<b>Engine Fuel Systems</b>	<b>20604229</b>	<b>2(2,0)</b>
Complete studies for both fuel systems of the reciprocating and jet engines, their types, parts, maintenance, troubleshooting and general system discrepancies.		



<b>Aircraft Propellers</b>	<b>20604261</b>	<b>3(3,0)</b>
Studies in propeller theories, forces acting on propellers, types, parts, auxiliary systems, functions, maintenance, removal and installation.		
<b>Aircraft Propellers Workshops</b>	<b>20604262</b>	<b>1(0,3)</b>
Studies in propeller theories, forces acting on propellers, types, parts, auxiliary systems, functions, maintenance, removal and installation.		
<b>Training</b>	<b>20604291</b>	<b>3 (280 training hours)</b>
Equivalent To 8 Weeks of Field Training Targeted To Emphasize The Ability of Students To Apply The Theories In The Real World of The Profession.		
<b>Project</b>	<b>20604292</b>	<b>3</b>
An Integrated Design Project To Practice The Principles of Analysis And Design Acquired Throughout The Course of The Student's Study.		

