Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020600111
Course Title	**العدد اليدوية والمعدات المستخدمة على الطائرات** **Aircraft hand tools**
Credit Hours	3
Theoretical Hours	1
Practical Hours	6

Short Description:

Material Deals with hand tools and how to use each tool in correct and safe form, and the way of using measuring devices, and how to do safety wiring for moving parts of engine.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the types of hand tools.
2. To identify the precision measuring tools.
3. To identify the hardware of an aircraft (Bolts, Nuts …).
4. How to do safety wiring.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	**Hand tools**	- Identifying the hand tools - how to use hand tools. - objective of hand tools.	**8 Hours**
2	**Aircraft Hardware**	- Identifying the aircraft Hardware. - Remove & install bolts & nuts - Use of the torque wrench - Internal & external threads cutting - Taking measurement by steel rule & micrometer - Drawing lines, angles & curves - Cutting sheets by hacksaw - Using files to cut different shapes - Safety wiring - Saving a nut by cotter pin	**8 Hours**
No.	**Unit Title**	**Unit Content**	**Hours**
1	**Hand tools**	- Identification of hand tools, aircraft hardware - Remove and install bolts and Nuts - Use of the torque wrench - Internal and external threads Cutting - Measurement by steel rule and micrometer - Drawing lines, angles and Curves	**50 Hours**
2	**Using Hand tools and safety wiring**	- Cutting sheets by hacksaw - Using files to cut different Shapes. - Safety wiring. - Safeting a nut by cotter pin	**46 Hours**

Teaching Methods:

Method of teaching this material depends on instructor techniques and the facilities in the workshop and class such as data show(power point), board ,parts found in workshop.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604111
Course Title	الديناميكا الهوائية للجناح الثابت Fixed wing aerodynamics
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

Studies in aerodynamics and flight theorem and apply it on the wing airfoil how's responsible about the lift force and study the aircraft control surfaces during flight and ground run as well as the flight regimes according to speed of sound in addition to the main forces affect the aircraft during flight. .

Course Objectives:

By the end of this course students are expected to be able to:

1.To identify the types of airplanes: their construction & how they are controlled.
2. To identify the principle of flight and stability details .
3. To identify the principles of fixed-wing aerodynamics .

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	The airplane	• The airplane . • The airplane structure. • Parts of an airplane . • Types of airplane . • Classes of airplane .	**2**
2	Introduction to the theory of flight	• The four forces . • Energy and inertia . • Freedom of movement . • Direction of forces relative to the flight path. • Vector quantities. • Weight . • Centre of gravity . • Lift equation . • Angle of attack and the lift coefficient. • The line of thrust . • Slip streams .	**5**
3	Drag	• Lift generation . • Pressure differential • Lift coefficients. • Boundary layer air flow . • Laminar and turbulent airflow. • Flow separation . • Aspect ratio. • Induced drag . • Parasite drag . • Aircraft lift/drag ratio.	**5**
4	Aircraft control	• Pitching moment . • Aerodynamic centre . • Neutral point. • Aileron. • Flaps . • Flap systems . • Advantages of using flaps . • Flaperons . • Reflex flaps	**6**

No.	Unit Title	Unit Content	Hours
		• High lift devices . • Auxiliary lift devices .	
5	Aircraft Stability	• Longitudinal stability . • Lateral stability . • Directional stability .	**4**
6	Basic aerodynamics	• Compressible flow. • Effect of the atmosphere on flight. • Composition of the atmosphere . • Structures . • Temperature variation with altitude . • Density altitude . • Flow visualization . • Airfoil section flow . • Vortex wing tip flow . • Delta wing vortex repair .	**5**
7	High speed aerodynamics	• Mach number . • Realms of flight . • The speed regimes . • Low subsonic . • High super sonic . • Low super sonic . • High super sonic . • Low hyper sonic . • High hyper sonic . • Compressibility effect . • Bernoulli equation . • Formation of shock waves . • Types of shock waves .	**5**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.
Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604112
Course Title	مشغل الديناميكا الهوائية للجناح الثابت Fixed wing aerodynamics workshop
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description:

Explain the aircraft parts and illustrate the job of each control surface and who is connected to the cockpit and now the responsible part of each movement in any direction.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the principles of flight .
2. To identify the parts of aircraft.
3. To identify the aircraft control surfaces.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1		• Application of Bernoulli's principles.	**3**
2		• Allocating airfoil centre of pressure.	**3**
3		• Identifying parts of aircraft.	**3**
4		• Moving flight control surfaces using the controls in cockpit.	**3**
5		• Measuring deflection angles of flight control surfaces.	**3**

Teaching Methods:

Lessons are delivered using the workshops devices .

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604113
Course Title	الديناميكا الهوائية للطائرات العامودية Rotary wing aerodynamics
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

مبادئ الطيران	Principle of flight of the rotary wing aircraft and stability and control and how to calculate the forces on the wing surface as well as the pressure difference and side effect of the wither.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the rotary wing aircraft principles .
2. To identify rotary controls .
3. To Identify Rotary Wing Stability .

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Rotary wing aircraft	• Principles of flight • Third law of Newton .	**6**
2	Fundamentals of rotary wing aircraft	• History of rotary-wing A/C • Configurations of rotary-wing A/C • Types of rotary systems • Forces acting on the rotor • Helicopter flight conditions	**6**
3	Rotor craft controls	• Collective pitch control • Cyclic control • Tail rotor control	**6**
4	Helicopters flight	• Stabilizer systems • Helicopter vibrations • Rigging specifications • Airplane assembly • Control operating systems • Biplane assembly and rigging	**9**
5	Aircraft structure	• Evolution of aircraft structure • Types of aircraft structure • Structure that produce lift • Structure that produce control • Structure that modify lift • Structure that aid control • Structure that hold people • Structure that support the aircraft on the ground • Structure that hold the power plant	**5**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604114
Course Title	مشغل الديناميكا الهوائية للطائرات العامودية Rotary wing aerodynamics workshop
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description:

الطائرات المرو	Rotary wing and control surfaces, calibration and redness and have acknowledge about the control parts and the steps of the vertical flight

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify rotary aircraft construction .
2. To identify rotary aircraft controls .
3. To identify rotary aircraft safety .

Detailed Description:

No.	Unit Title	Unit Content	Hours
1		• Application of Newton third law.	1
2		• Allocating airfoil centre of pressure.	3
3		• Identifying parts of aircraft.	3
4		• Moving flight control surfaces using the controls in cockpit.	3
5		• Measuring deflection angles of flight control surfaces.	2
6		• Rigging of rotary .	2
7		• Safety in fields.	2

Teaching Methods:

Lessons are delivered using the workshops devices .

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604121
Course Title	نظم الوقود والحماية من الحريق Fuel systems and fire protection systems
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

Fuel systems in aircraft and the main parts of it and how to control it as well as the way of inspection it and the correct way of the refueling and how to deal with the fire of the oily materials, and contains weight and balance methods of the aircraft and how to distributes loads according to the center of gravity in addition to how to deal with the aircraft while it's on earth

Course Objectives:

By the end of this course students are expected to be able to:

1. to identify the furl system components.
2. to identify the types of fuel tanks and how to service it.
3. servicing process and safety procedures.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Aviation fuels and fuel system requirements	• characteristics of aviation fuel • reciprocating engine fuel • vapor lock- • detonation • fuel identification • fuel types	**6**
2	Fuel system operation 1	• small single-engine A/C fuel system • gravity feed system • pump feed system	**6**
3	Fuel system operation 2	• high wing airplane wing fuel injection system • small multi engine A/C fuel system • helicopter fuel system • A/C fuel system components	**6**
4	Fuel system repair, testing, and servicing	• Fuel tank repair and testing • Checking for fuel system contaminations • fueling procedure	**6**
5	fire protection system	• principles of fire detection system • classes of fires • fire-detection over-heat system • fire detection system inspection and testing	**4**
6	Fire extinguishing systems	• fire extinguishing agents • portable fire extinguisher • fixed fire extinguisher system • inspection and servicing	**4**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.
Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604122
Course Title	مشغل نظم الوقود والحمايه من الحريق Fuel systems and fire protection systems workshop
Credit Hours	2
Theoretical Hours	0
Practical Hours	6

Short Description:

hooting and قطع نظام الوقو	Fuel systems components, types of fuel aviation , fire protection systems, troubleshooting and repair, fuel servicing according to safety regulations.

Course Objectives:

By the end of this course students are expected to be able to:

1. to identify the fuel systems components.
2. to identify how to service, fuel,…. .
3. to identify fire types and fire extinguisher .
4 . Identify The Leaks And Repair According To The Fuel Tanks Type.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Aircraft fuel systems	• A/C fuel system components identification • Fuel tanks identification • Fire extinguisher identification- • Pressure refueling • Fuel leaks classification • Bladder tanks inspection	**12**
2	Fire protection systems	• Fire extinguisher	**4**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604131
Course Title	وزن واتزان الطائرات Aircraft weight and balance
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

nd servicing وزن واتزان الط	Weight and balance at aircraft depending on stability and equilibrium equations for fixed wing aircrafts and using charts for rotary wing aircraft and including the load distributions on every parts on the aircraft and how to deal with the weight changes during flight.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the importance of weight and balance.
2. To identify how to locate the balance point on the aircraft.
3. To identify how to service the aircraft(fueling , towing,…)

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Weight and balance	• Importance of weight and balance. • Principle of weight and balance. • Terms used in weight and balance. • Weighing procedure. • Locating the balance point. • Center of gravity range. • Shifting the center of gravity. • Adverse-loading center of gravity. • weight and balance changes after an alternation. • Helicopter weight and balance. • Loading and weight distribution.	**16**
2	Ground and handling servicing	• shop safety • fire protection • safety in flight line • jacking and hoisting • ground movement of an aircraft • ground servicing equipment • aircraft fueling • engine starting procedure	**16**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604132
Course Title	مشغل وزن واتزان الطائرات Aircraft weight and balance workshop
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description:

ممارسة الخدمة	How to apply the load distribution on the aircraft and calculate the center of gravity in practical way and consider the weight of the main parts and how to deal with repairs on aircraft components and how tie the loads inside the aircraft and distribute the cargo and passengers

Course Objectives:

By the end of this course students are expected to be able to:

1. to identify how to give signals for the pilot.
2. to identify the ground servicing equipments.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Ground handling servicing	• Tie down procedure • Aircraft jacking • Aircraft lowering • Oxygen servicing • Fuel servicing • Hand signals on ground • Operating ground servicing equipment • Tire inflation • Fire and fire protection	**12**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604243
Course Title	النظم الهيدروليكية على الطائرات Aircraft hydraulic systems
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

hydraulic system and pneumatic systems and landing gear component which concern about inspection and servicing and how this parts are operates and major and assistance landing systems and how each one work separately.

Course Objectives:

By the end of this course students are expected to be able to::

1. to identify the hydraulic system components.
2. to identify aircraft pneumatic system.
3. to identify the landing gear system.
4. to identify aircraft wheels and brakes.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Principles of hydraulic power	• Static fluid pressure. • Pascal's law. • Relationship between pressure ,force, and area. • Relationship between area, distance, and volume. • Mechanical advantage in hydraulic system.	**6**
2	hydraulic system components and design	• hydraulic fluid. • Types of hydraulic fluid. • Basic hydraulic system.	**4**
3	hydraulic power system	• Evolution of the hydraulic system. • Special types of aircraft hydraulic system. • hydraulic system components. • Large-aircraft hydraulic system.	**6**
4	Aircraft pneumatic system	• High , medium and law pressure system. • Pneumatic system components.	**4**
5	Aircraft landing gear system	• Aircraft wheels. • Nose wheel steering systems. • Landing gear alignment, support and retraction. • Landing gear rigging.	**4**
6	Aircraft brakes	• Types of brakes. • Brake construction. • Brake actuation system. • Brake inspection and service. • Malfunction and damage.	**4**
7	Aircraft tires and tubes	• Tire types . • Tires construction. • Tire inspection on the aircraft • Tire inspection off the aircraft. • Tire storage. • Tire repair and ret reading. • Tire balancing.	**4**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.
Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604244
Course Title	مشغل النظم الهيدروليكية على الطائرات Aircraft hydraulic systems Workshop
Credit Hours	2
Theoretical Hours	0
Practical Hours	6

Short Description:

انظمة الهيدروليـ	hydraulic systems and its parts and servicing and the main controllers of each system.

Course Objectives:

By the end of this course students are expected to be able to:

1.To identify the hydraulic system components.
2.operational check for hydraulic system .
3. practice on the removal and installation of brake system , wheels.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	hydraulic system components and design	• hydraulic system components identification.	**3**
2	Hydraulic power system	• utility hydraulic system filter removal and installation. • Operational check of the non-return valve. • removal and installation of speed brake actuator. • Operational check of aircraft speed brake system.	**3**
3	Aircraft landing gear and brakes system	• Aircraft wheel removal and assembly. • Aircraft tire inspection. • Aircraft brake inspection. • Master cylinder servicing. • Assembly and disassembly of hydraulic filter.	**6**
4	Aircraft landing gear system	• Operational check of f/16 landing gears. • Operational check of aircraft steering system.	**4**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.
Lesson delivery includes activities, games, songs, movies, Role Play, using Regalia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604151
Course Title	تصميم الطائرات Aircraft Design
Credit Hours	3
Theoretical Hours	1
Practical Hours	6

Short Description:

دراسة هياكل ال	The main parts of the aircraft and recognize the shapes of the aircraft structure and know the stress on each parts as well as design the flight parameters to accomplish the mission required. and have acknowledge about the internal parts of the aircraft

Course Objectives:

By the end of this course students are expected to be able to:

1. to identify the types of aircraft structures .
2. to identify metallic aircraft structure .
3. to identify how to prevent corrosion on metallic structures .
4. to identify airfoil sections types and applications .

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Aircraft structure	• aircraft structures • structural shapes • fuselages • wings • tail and control surface • auxiliary flight surface • cockpits, cabin and compartments • landing gear • seaplane hulls and aircraft floats • helicopter structure • airplane station numbers • zoning	**12**
2	Metallic aircraft	• Metallic aircraft construction • Stresses and structures • Materials for sheet metal construction • Corrosion prevention of sheet metal materials	**8**
3	Structural design	• Aircraft design and construction • Structural design • Types of aircraft structures • Airfoil sections • Airfoil control and aerodynamic configurations • Empennage structures • Fuselage structures • Landing gear • Powerplant support structures • Access and inspection	**12**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604261
Course Title	فحص وصيانة هياكل الطائرات Aircraft structures inspection and maintenance
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

prevention , فحص المواد,م	Recognize the type of material used for aircraft structure and the types of corrosion and how to prevent it and remove it and repair of the sheet metal and the non destructive tests which includes visual ,liquid Penetrants, magnetic particle, ultrasonic inspection un metallic repairer.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the types and properties of metals.
2. To identify the types of corrosion and its control.
3. To identify the types of non-destructive inspection.
4. To identify how to make repair for sheet metals.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Aircraft structural materials	• Metals • Non metallic structural material • The airfoil	**6**
2	Corrosion and control	• Corrosion – an electro- chemical reaction • Types of corrosion • Corrosive agents • Detection corrosion • Corrosion prone areas • Removal and treatment of corrosion • Corrosion prevention	**6**
3	Non destructive inspection	Visual inspection Liquid penetrant inspection Magnetic particle inspection Eddy current inspection Ultrasonic inspection radiographic inspection	**6**
4	Sheet metal structural repair	• Stress and structure • Material for sheet metal aircraft construction • Tools for sheet metal construction and repair • Structural fasteners • Installation of solid rivets • Repair of sheet metal structure	**8**
5	Non-metallic structure repair	• Bonded structure construction and repair • Transparent plastic materials	**6**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.
Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604262
Course Title	مشغل فحص وصيانة هياكل الطائرات Aircraft structures inspection and maintenance workshop
Credit Hours	2
Theoretical Hours	0
Practical Hours	6

Short Description:

rilling . نظام ازالة الصد	Have a knowledge about the procedure of non destructive tests and recognize the necessary type of it should be accomplished and how to deal with corrosion and prevent it on the aircraft parts

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the types and removal of corrosion .
2. To identify how to find cracks by using NDI .
3. To identify how to make repair for sheet metals.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Corrosion and its control	• Identification of corrosion. • Removal of corrosion by chemical and mechanical means.	**6**
2	Non- Destructive inspection	• Finding cracks by the use of magnifying glass. • Finding cracks by the dye penetrant • Method	**8**
3	Sheet metal structure repair	• Drawing lines, angles and curves • Cutting piece of metal using square shear • Rivet layout • Centre punch marking • Hole drilling • Counter sinking • Hole dimpling • Riveting two sheets by universal rivet • Riveting two sheets by flush rivet • Rivet removal • Universal head blind riveting • Bending a piece of sheet metal • Damage hole repair	**14**
4	Non-metallic structure repair	• Honeycomb simple repair	**4**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.
Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
4.كراسة المدرب اعداد كلية الامير فيصل الفنية

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604241
Course Title	نظم الضغط داخل قمرة الطائرة Environmental control and canopy systems .
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

النظام البيئي دا	The assistance systems inside the cabin like pressurization systems and oxygen systems as well as deicing and air conditioning as the human body used to

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the atmosphere, pressure and temperature.
2. To identify the types of oxygen system.
3. To identify the aircraft pressurization system.
4. To identify the ice rain control system.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Aircraft cabin atmosphere control system	• Physiology of flight • Aircraft oxygen system • Aircraft pressurization system • Aircraft heaters • Aircraft air conditioning system • Canopy seal pressurization system	**16**
2	Ice & Rain control system	• Ice control systems • Anti-icing system • Rain control system • Wind shield system • Chemical rain repellant • High velocity air blast	**16**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
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Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020604242
Course Title	مشغل نظم الضغط داخل قمرة الطائرة Environmental control and canopy systems workshop
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description:

bleshooting, قطع نظام الضغ	Have a knowledge about pressurization systems and practical application on it and finding problems and solve it and do some modification to make it more useful.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the Components of pressurization system and oxygen system.
2. To identify the troubleshooting of pressurization system and oxygen system.
3. To identify the main components for canopy seal system.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	Aircraft oxygen system	• Identifying the main components of oxygen system.	**4**
2	Aircraft pressurization system	• Identifying the main components of pressurization system	**4**
3	Aircraft Air Conditioning	• Identifying the air Conditioning components	**4**
4	canopy system	• Identifying the main components of canopy seal system	**4**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Lesson delivery includes activities, games, songs, movies, Role Play, using Realia and replicating real life scenarios and situations.

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Airframe Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
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Specialization Requirements

Specialization	هياكل الطائرات
Course Number	020600115
Course Title	محركات الطائرات Aircraft Engines
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

دراسات عامة	The course include study of the parts of the jet engines and reciprocating engines and the systems operated on it, and study the propellers.

Course Objectives:

By the end of this course students are expected to be able to:

1. Know the principles of reciprocating & turbine engines operation.
2. Recognize reciprocating & turbine engines types.
3. Know the construction of reciprocating & turbine engines.
4. Know the nomenclature, theory & classifications of propellers

- **Detailed Description:**

No.	Unit Title	Unit Content	Hours
1	**Reciprocating Engines**	▪ Design and construction ▪ Types of reciprocating engines ▪ Engine components: Crankcase, Engine mounting points, Crankshafts, Bearing, Connecting rods, Pistons, Cylinders, Valves, Valve operating mechanism, Propeller reduction gears, Propeller shafts, Engine identification ▪ Operating Principles ▪ Energy transformation ▪ Energy transformation cycles: Four-stroke cycle, Valve timing, Firing order, Power impulses, Two-stroke cycle, Work-power consideration, Work, Power, Horsepower, Piston displacement, Engine efficiency, Factors affecting power, Distribution of power	**14**
2	**Turbine Engines**	▪ Design and Construction ▪ History of jet propulsion ▪ Jet propulsion today ▪ Types of jet propulsion: Rocket, Ram jet, Pulse jet, Gas turbine engine, Engine component, Air inlet ducts, Compressor section, Diffuser section, Combustion section, Turbine section, Exhaust section, Accessory section, Noise suppression , Engine mounts, Bearing, Turboprop engine, Turbo shaft engine , Auxiliary power units ▪ Operation Principles ▪ Energy transformation :Energy	**8**

No.	Unit Title	Unit Content	Hours
		transformation cycle, Producing thrust, Thermal efficiency, Factor affecting thrust	
3	**Propellers**	▪ Propeller principle ▪ Nomenclature ▪ Propeller theory: Forces acting on a propeller, Propeller pitch ▪ Propeller classifications	**6**

Teaching Methods:

Method of teaching this material depends on instructor techniques and the facilities in the class such as data show(power point), board ,parts found in workshop.

Books and references:

1. A & P technician Power plant textbook, JEPPESEN Sanderson Inc. 2004.
2. Aircraft propulsion and gas turbine engines, Ahmad F. El-Sayed
3.Leslie, aviation; FAA Docket (2003 - 15585).
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Specialization Requirements

Specialization	هياكل الطائرات
Course Number	020604272
Course Title	مشغل النظم الكهربائية لهياكل الطائرات Aircraft Electrical Systems workshop
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description:

The practical workshop enables the student to practice the assembly and disassembly of Generator, Motor, Batteries & switches, protection devices, relays and contactor ,how to make electrical connections assembly and disassembly of external light system.

Course Objectives:

By the end of this course students are expected to be able to:

1. Training the student how to assembly and disassembly of DC and AC Generator.
2. Training the student how to assembly and disassembly of DC and AC Motor
3. Training the student how to assembly and disassembly of Batteries .
4. Training the student how to assembly and disassembly of switches, protection devices, relays and contactor.
5. Training the student how to make electrical connections.
6. Training the student how to assembly and disassembly of external light system.

- **Detailed Description:**

No.	Unit Content	Hours
1	Workshop Safety	6
2	DC and AC Generator.	6
3	DC and AC motor.	6
4	Batteries	6
5	switches, protection devices, relays and contactor.	6
6	Electrical connection	6
7	External light system	6

Teaching Methods:

Depends on instructor techniques and the facilities in the workshop

Books and references:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .
2. Jeppesen Sanderson Inc (2004).
3.Leslie, aviation; FAA Docket (2003 - 15585).
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Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020602291
Course Title	التدريب Training
Credit Hours	3
Theoretical Hours	0
Practical Hours	280 TRAINING HOUR

Short Description:

Equivalent to 8 weeks of field training targeted to emphasize the ability of student to apply the theories in the real world of the profession.

Course Objectives:

By the end of this course students are expected to be able to:

The training gives the student an opportunity to apply the theory gained within the theoretical courses of Aircraft engine through practical experimentation in the real world of the profession

Specialization Requirements

Specialization	هياكل الطائرات
Course Number	020600116
Course Title	مشغل محركات الطائرات Aircraft Engines workshop
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description:

The course include study of the parts of the jet engines and reciprocating engines and the systems operated on it, and study the propellers.

Course Objectives:

By the end of this course students are expected to be able to:

1. Perform assemble & disassemble for all the parts, the systems, & the subsystems for reciprocating engine.
2. Know the basic construction & the systems of the turbine engine.
3. Recognize reciprocating & turbine engines types.
4. Know the nomenclature, theory & classifications of propellers.

- **Detailed Description:**

No.	Unit Content	Hours
1	Types of reciprocating engines	6
2	Locating strokes in reciprocating engine	6
3	Locating pistons in induction, compression, power & exhaust strokes	6
4	Types of the turbine engines.	6
5	The turbine engine component	6
6	Nomenclature of propeller	6
7	Propeller classifications	6

Teaching Methods:

Method of teaching this material depends on instructor techniques and the facilities in the class such as data show(power point), board ,parts found in workshop.

Books and references:

1. A & P technician Power plant textbook, JEPPESEN Sanderson Inc. 2004.
2. Aircraft propulsion and gas turbine engines, Ahmad F. El-Sayed
3.Leslie, aviation; FAA Docket (2003 - 15585).
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Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020600114
Course Title	**مشغل امان الطائرات وخطوط الطيران** aircraft And Flight lines Safety workshop
Credit Hours	2
Theoretical Hours	0
Practical Hours	6

Short Description:

Deals with the safety requirements associated with safe operation of the aircraft To identify the levels of maintenance, identify the types of inspections and the time for each one, identify the responsibilities of controls sections and identify how to use (781) aircraft forms.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify how to use (781) aircraft forms.
2. to know how to deal with aircraft in flight line.
3. to know how to deal with power tools.
4. to know how to deal with different types of hazards.

Detailed Description:

No.	Unit Title	Unit Content	Hours
1	**AFTO Forms 781 Series**	- Maintenance documentation - AFTO form 781 series - Symbols and their uses - Maintenance data collection system - AFTO form 349 and 350 Identification tags	**42 Hours**
2	**Flight line Safety**	- Aircraft and flight line safety - Aircraft armament safety - Ground handling and servicing	**42 Hours**

Teaching Methods:

Method of teaching this material depends on instructor techniques and the facilities in the class such as data show(power point), board ,parts found in workshop.

References:

1. J. D .Anderson; Flight ,Mc Grow - Hill (Sixth Edition 2008) .

2. Airframe Jeppesen Sanderson Inc (2004).

3.Leslie, aviation; FAA Docket (2003 - 15585).

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Specialization Requirements

Specialization	هياكل الطائرات
Course Number	020604271
Course Title	**النظم الكهربائية لهياكل الطائرات** Airframe Electrical Systems
Credit Hours	2
Theoretical Hours	2
Practical Hours	0

Short Description:

Studies about the types of the power supply, controlling, protection and the power utilization components and systems in the aircraft.

Course Objectives:

By the end of this course students are expected to be able to:

1. To identify the types of the power supply.
2. To identify the types of electrical wires..
3. To recognize the electrical system components (Switches, Motors,etc).

- **Detailed Description:**

No.	Unit Title	Unit Content	Hours
1	Airborne Sources of Electrical Power	• Introduction. • DC Generator Construction. • Alternator. • Storage Battery. • Battery Chargers.	**10**
2	Wiring Installation	• Wire. • Connectors. • Bonding	**6**
3	Electrical System Components	• Switches. • Current limiting devices • Electrical control placards • Positions lights • Motors • Motor speed, Direction and Braking.	**12**

Teaching Methods:

Lessons are delivered using the interactive communicative approach in student centered classes where the teacher acts as a facilitator while students acquire the language naturally.

Books and references:

1. Aircraft Electrical and Electronic Systems Principles (Operation and maintenance), Mike Tooley and David Wyatt, First Edition, 2009.
2. Aircraft Electrical Systems , E H J Pallet, Third edition 1997
3. Aircraft Electricity and Electronics, Thomas K. Eismin 2014
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Associate Degree Program

Specialization	محركات الطائرات
Course Number	020300111
Course Title	دارات كهربائية Electrical circuits
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Short Description

The course covers the following topics: Circuits and circuit elements. Voltage, Current, and Resistance, Ohm's Law, Energy and Power, Series-Parallel Circuits, Kirchhoff's voltage and current laws. Introduction to circuit analysis: Ohm's law, Introduction to Alternating Current and Voltage, Capacitors, Inductors, RLC Circuits and Resonance. Electrical Measurements.

Course objectives:

By the end of this course students are expected to be able to:

1. Define and study current and voltage sources.
2. Use Ohm and Kirchhoff's laws for analyzing DC electrical circuits.
3. Study the elements of AC circuits.
4. Study the RLC in AC circuits.

- **Detailed Description:**

No	Unit Title	Unit Content	Hours
1	**Voltage, Current, and Resistance**	▪ Atomic Structure ▪ Electrical Charge ▪ Voltage, Current, and Resistance ▪ Voltage and Current Sources ▪ Resistors ▪ The Electric Circuit ▪ DC Circuit Measurements ▪ Electrical Safety	**6**
2	**Ohm's Law, Energy and Power**	▪ The Relationship of Current, Voltage, and Resistance ▪ Calculating Current ▪ Calculating Voltage ▪ Calculating Resistance ▪ Energy and Power ▪ Power in an Electric Circuit ▪ Resistor Power Ratings ▪ Energy Conversion and Voltage Drop in Resistance ▪ Power Supplies	**6**
3	**Series Circuits**	▪ Resistors in Series ▪ Current in a Series Circuit ▪ Total Series Resistance ▪ Application of Ohm's Law ▪ Voltage Sources in Series ▪ Kirchhoff's Voltage Law ▪ Voltage dividers ▪ Power in Series Circuits	**3**
4	**Parallel Circuits**	▪ Resistors in Parallel ▪ Voltage in a Parallel Circuit ▪ Kirchhoff's Current Law ▪ Total Parallel Resistance ▪ Application of Ohm's Law ▪ Current Sources in Parallel	**3**

		▪ Current Dividers ▪ Power in Parallel Circuits	
5	**Series-Parallel Circuits**	▪ Identifying Series-Parallel Relationships ▪ Analysis of Series-Parallel Resistive Circuits ▪ Voltage Dividers with Resistive Loads ▪ The Wheatstone Bridge ▪ The Superposition Theorem	**9**
6	**Introduction to Alternating Current and Voltage**	▪ The Sinusoidal Waveform ▪ Sinusoidal Voltage Sources ▪ Sinusoidal Voltage and Current Values ▪ Angular Measurement of a Sine Wave ▪ The Sine Wave Formula ▪ Introduction to Phasors ▪ Analysis of AC Circuits ▪ Superimposed DC and AC Voltages ▪ Non sinusoidal Waveforms ▪ The Oscilloscope ▪ Phasors, complex numbers, rectangular and polar forms of complex numbers, mathematical operations. ▪ AC circuit measurement	**6**
7	**Capacitors**	▪ The Basic Capacitor ▪ Types of Capacitors ▪ Series Capacitors ▪ Parallel Capacitors ▪ Capacitors in DC Circuits ▪ Capacitors in AC Circuits	**3**
8	**Inductors**	▪ The Basic Inductor ▪ Types of Inductors ▪ Series and Parallel Inductors	**3**

		▪ Inductors in DC Circuits ▪ Inductors in AC Circuits	
9	**RLC Circuits and Resonance**	▪ RC Circuits ▪ RL Circuits ▪ RLC Circuits ▪ Resonance circuit	**9**

Teaching Methods:

A teaching method used by teacher comprises the principles and methods to enable student learning such as lecturing and demonstration by using different instructional aides and resources available.

Books and references:

1. Robert L. Boylested "introductory circuit analysis" prentice-hall Inc 1997
2. Thomas L. Floyd " principles of electric circuits" charlese, Merrill publishing company,1981
3. Noel M. Morris and Frank W.Senior "electric circuits analysis" USA NY,1977
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Course Book

1. Thomas L. Floyd "principles of electric circuits", Prentice Hall, 2007.

Associate Degree Program

Specialization	هياكل الطائرات
Course Number	020300112
Course Title	مختبر دارات كهربائية Electrical circuits lab
Credit Hours	1
Theoretical Hours	0
Practical Hours	3

Short Description

The objective of the Electrical Circuits lab is to expose the students to the electrical circuits and give them experimental skill. To build circuit construction skills using different circuit element. An experiment covers DC and AC circuit construction and measurements, RLC Circuits, Resonance and Measuring devices.

Course objectives:

By the end of this course students are expected to be able to:

1. Measure voltages and currents to verify KVL and KCL.
2. Identify shorts and opens in a malfunctioning circuit, and define and verify the equivalent resistance of a given network.
3. Measure the inductance of an inductor.
4. Measure the capacitance of a capacitor.
5. To be familiar with an AC oscilloscope measurement.
6. Identify resonance circuit.

- **Detailed Description:**

No	Experiment Title	Hours
1	Resistor and color code	6
2	Series DC circuits	6
3	Series and parallel DC circuits	6
4	Superposition principles	6
5	The Oscilloscope	9
6	RLC components	9
7	Resonant circuits	6

Teaching Methods:

A teaching method used by teacher comprises the principles and methods to enable student learning such as lecturing and demonstration by using different instructional aides and resources available.

Books and references:

1.Robert L. Boylested "introductory circuit analysis" printce-hall Inc 1997

2. Noel M. Morris and Frank W.Senior "electric circuits analysis" USA NY,1977

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Course Book

1. Thomas L. Floyd "principles of electric circuits" charlese, Merrill publishing company.