Faculty of Aviation Science

Department ofAircraft Maintenance

Study Plan of the Bachelor's Degree

In: Aircraft Maintenance

Academic Year: 2017/2018

Vision of the Department:

Entrepreneurship and distinguished vocational learning and training in the field of aviation sciences.

Mission of the Department:

Providing community with qualified specialists, competent enough to keep abreast with the latest development in aviation sciences combining theory and practice.

Objectives of the Department:

- Ensure graduates a comprehensive technical knowledge and skills in performing all aircraft maintenance activities.
- Furnish students with a detailed understanding of the principles of aircraft engines and systems maintenance, enabling the selection of the most appropriate maintenance and repair techniques.
- Enhance and develop graduates capability to meet the demand of aircraft maintenance organization keeping in par with the regulations and safety procedures set by regulatory bodies.
- Qualify graduates with a comprehensive science education combined with aircraft maintenance skills competency.

Intended Learning Outcomes (ILOs):

Students who graduates from the aircraft maintenance will demonstrate:

- Understanding of basic science involved in aircraft maintenance activities.
- Understanding of theory of operation of aircraft engines and systems.
- The ability to understand written maintenance report and write the appropriate paper work needed by regulatory bodies for aircraft maintenance.
- Knowledge of regulatory and legal issues impact aircraft maintenance.
- The ability to test, inspect, maintain, repair and troubleshoot faults in aircraft systems and engines.
- The graduates should be able to apply his knowledge in a practical manner using detailed procedures and manufacturer's instructions

Framework

Framework of the Bachelor's Degree in Aircraft Maintenance Bachelor Degree (137 Credit Hrs.)

Sequence	Classification	Compulsory	Elective	Percent %
1st	University Requirements	18	9	14%
2nd	Faculty Requirements	24	-	19%
3rd	Department Requirements	77	-	60%
4th	Ancillary Courses	9	-	07%
Total		128	9	100%

Course Numbering

1 0	1 2	0 0	1	8
Sequence	Course Level	Cognitive Domain	Dept. Code	Faculty Code
			1 Aircraft Maintenance	Aviation Science

Cognitive Domains

Number	Cognitive Domain	Credit Hours
0	General	13
1	Aviation Science	9
2	Electrical and Electronics Fundamentals	10
3	Aircraft Systems	15
4	Aircraft Engines	16
5	Aircraft Maintenance	20

1. University Requirements: (27 Credit Hours)

A. Compulsory Requirements: (15 Credit Hours)

Course No.	Course Title	Credit Hr.
55011102	Arabic Language (1)	3
55011103	English Language (1)	3
55011107	National Education	3
55011308	Military Sciences	3
55011110	Computer Skills	3
55011108	Arabic Language Basics	0
55011109	English Language Basics	0
55011110	Computer Basics	0
Total		**15**

B. Elective Requirements: (12 Credit Hours) from the following list:

Course No.	Course Title	Credit Hr.	Prerequisite
55021101	Arabic Language (2)	3	55011101
55021102	English Language (2)	3	55011102
55021203	Principles of Psychology	3	-
55021204	Human Rights	3	-
55041203	Environment and Community	3	-
55011306	Entrepreneurship and Creativity	3	
55011204	Life Skills	3	-
55031101	Islamic Culture	3	-
55031205	Quds and Hashemite Custodianship	3	-
55041206	Health and Community	3	-
55041307	Communication and Internet	3	-
Total		12	

2. Faculty Requirements: (24 Credit Hours)

A. Compulsory Requirements: (24 Credit Hours)

Course No.	Course Title	Credit hr.	Theoretical	Practical	Prerequisite	Corequisite
32052108	Aviation Law and Air Safety	3			-	-
55011211	Advanced English Language (1)	3				
55012112	Advanced English Language (2)	3			55011211	
55011212	Communication Skills and Technical Writing	3			55011211	
55012114	Specialized English Language	3				55012112
81001102	Aircrafts Types and Performance	3				
81001101	Theory of Flight	3			-	
81002203	Aviation Maintenance Management	3				
Total		**24**				

3. Department Requirements (86 Credit Hours)

A. Compulsory Requirements: (77 Credit Hours)

Course No.	Course Title	Credit hr.	Theoretical	Practical	Prerequisite	Corequisite
81012201	Materials and Hardware (1)	2			55041108	
81012202	Materials and Hardware (1) workshop	1			-	81012201
81011205	Human Factors	1			-	-
81012303	Materials and Hardware (2)	2			81012201	-
81012304	Materials and Hardware (2) workshop	1			-	81012303
81011206	Aviation Legislation	2			-	-
81022101	Electrical Fundamentals (1)	2			55041208	-
81022102	Electrical Fundamentals (1) Lab.	1				81022101
81022203	Electrical Fundamentals (2)	2			81022101	-
81022204	Electrical Fundamentals (2) Lab.	1			-	81022203
81022205	Electronic Fundamentals	2			55041208	-
81022206	Digital Techniques & Electronic Instrument Systems	2			55041208	-

81032301	Turbine Aeroplane Aerodynamic Structures & Systems (1) (Theory of Flight and Airframe Structure)	2			81012201	-
81032302	Turbine Aeroplane Aerodynamic Structures & Systems (1) (Theory of Flight and Airframe Structure) (Workshop)	2			-	81032301
81033103	Turbine Aeroplane Aerodynamic Structures & Systems (2) Instruments & Avionics	2			81032301	-
81033104	Turbine Aeroplane Aerodynamic Structures & Systems (2) Instruments & Avionics (Workshop)	2			-	81033103
81033205	Turbine Aeroplane Aerodynamic Structures & Systems (3) Electric Power	2			81033103	-
81033206	Turbine Aeroplane Aerodynamic Structures & Systems (3) Electric Power (Workshop)	2			-	81033205
81034107	Turbine Aeroplane Aerodynamic Structures & Systems (4) (Air Conditioning, Fuel and Flight Control)	2			81033205	-
81034108	Turbine Aeroplane Aerodynamic Structures & Systems (4) (Air Conditioning, Fuel and Flight Control) (Workshop)	2			-	81034107
81034209	Turbine Aeroplane Aerodynamic Structures & Systems (5) (Hydraulic and Oxygen)	2			81034107	-
81034210	Turbine Aeroplane Aerodynamic Structures & Systems (5) (Hydraulic and Oxygen) (Workshop)	2			-	81034209
81043101	Gas Turbine Engine (1)	3			81032301	-
81043102	Gas Turbine Engine (1) (Workshop)	2			-	81043101
81043203	Gas Turbine Engine (2)	3			81043101	-

Course No.	Course Title	Credit hr.	Theoretical	Practical	Prerequisite	Corequisite
81043204	Gas Turbine Engine (2) (Workshop)	2			-	81043203
81043205	Piston Engines	2			81053101	-
81043206	Piston Engines (Workshop)	2		¤	-	81043205
81044107	Propeller	3			81053101	-
81044108	Propeller (workshop)	1			-	81044107
81053101	Maintenance Practices (1)	3			81012303	-
81053102	Maintenance Practices (1) (Workshop)	2			-	81053101
81053203	Maintenance Practices (2)	3			81053101	-
81053204	Maintenance Practices (2) (Workshop)	1			-	81053203
81054105	Maintenance Practices (3)	3			81053203	-
81054106	Maintenance Practices (3) (Workshop)	1			-	81054105
81054207	On Job Training	7	300 hours life training			
Total		**77**				

B. **Elective Requirements:** (9 Credit Hours)

Course No.	Course Title	Credit hr.	Theoretical	Practical	Prerequisite	Corequisite
52021112	Mathematics for Aviation Students	2			-	-
55041108	Physics for Aviation Students	2			-	-
55041209	Physics Lab. for Aviation Student	1			-	55041108
81002104	Basic Aerodynamics	3			55041108	-
81002205	Basic Aerodynamics work shop	1			81002104	-
Total		**9**				

4. Ancillary Courses (..... Credit Hours):

Course No.	Course Title	Credit hr.	Theoretical	Practical	Prerequisite
Total					

Advisory Study Plan for the Bachelor's Degree in

First Year				
First Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
52021112	Mathematics for Aviation Students	2		
81001102	Aircrafts Types and Performance	3		
81001101	Theory of Flight	3		
55011103	English Language (I)	3		
55011102	Arabic Language (I)	3		
	University Requirement	3		
	Culture and university behavior	0		
Total		17		

Second Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
55011211	Advanced English Language (I)	3		
32053108	Aviation Law and Air Safety	3		
81011205	Human Factors	1		
55041108	Physics for Aviation Students	2		
55041109	Physics Lab. for Aviation Student	1		55041108
81011206	Aviation Legislation	2		
55011101	Military Sciences	3		
	University Requirement	3		
Total		18		

First Year				
Summer Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
	University Requirement	3		
	University Requirement	3		
	University Requirement	3		
Total		9		

Second Year				
First Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
55012112	Advanced English Language (2)	3	55011211	
55012113	Communication Skills and Technical Writing	3	55011211	
81002104	Basic Aerodynamics	3	55041108	
81022101	Electrical Fundamentals (1)	2	55041108	
81022102	Electrical Fundamentals (1) work shop.	1		81022101
55012214	Specialized English Language	3		55012112
	University Requirement	3		
Total		18		

Second Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
81002203	Aviation Maintenance Management	3		
81022205	Electronic Fundamentals	2	55041108	
81012201	Materials and Hardware (1)	2	55041108	
81012202	Materials and Hardware (1) workshop	1		81012201
81002204	Basic Aerodynamics work shop	1	81002203	
81022203	Electrical Fundamentals (2)	2	81021201	

81022204	Electrical Fundamentals (2) work shop.	1		81022203
81022206	Digital Techniques & Electronic Instrument Systems	2	55041108	
Total		14		

SecondYear				
Summer Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
81012303	Materials and Hardware (2)	2	81012201	
81012304	Materials and Hardware (2) workshop	1		81012303
81032301	Turbine Aeroplane Aerodynamic Structures & Systems (1)	2	81012201	
81032302	Turbine Aeroplane Aerodynamic Structures & Systems (1)(Workshop)	2		81032301
Total		7		

Third Year				
First Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
81053101	Maintenance Practices (1)	3	81012303	
81053102	Maintenance Practices (1) (Workshop)	2		81053101
81033103	Turbine Aeroplane Aerodynamic Structures & Systems (2) Instruments & Avionics	2	81032301	
81033104	Turbine Aeroplane Aerodynamic Structures & Systems (2) Instruments & Avionics (Workshop)	2		81033103
81043101	Gas Turbine Engine (1)	3	81032301	
81043102	Gas Turbine Engine (1) (Workshop)	2		81043101
Total		14		

Second Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
81033205	Turbine Aeroplane Aerodynamic Structures & Systems (3) Electric Power	2	81033103	
81033206	Turbine Aeroplane Aerodynamic Structures & Systems (3) Electric Power (Workshop)	2		81033205
81043205	Piston Engines	2	81053101	
81043206	Piston Engines (Workshop)	2		81043205
81053203	Maintenance Practices (2)	3	81053101	
81053204	Maintenance Practices (2) (Workshop)	1		81053203
81043203	Gas Turbine Engine (2)	3	81043101	
81043204	Gas Turbine Engine (2) (Workshop)	2		81043203
Total		17		

Fourth Year				
First Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
81054105	Maintenance Practices (3)	3	81053203	
81054106	Maintenance Practices (3) (Workshop)	1		81054105
81044107	Propeller	3	81053101	
81044108	Propeller (workshop)	1		81044107
81034107	Turbine Aeroplane Aerodynamic Structures & Systems (4) (Air Conditioning, Fuel and Flight Control)	2	81033205	
81034108	Turbine Aeroplane Aerodynamic Structures & Systems (4) (Air Conditioning, Fuel and Flight Control) (Workshop)	2		81034107
Total		12		

Second Semester				
Course No.	Course Title	Credit hrs.	Prerequisite	Co-requisite
81034209	Turbine Aeroplane Aerodynamic Structures & Systems (5) (Hydraulic and Oxygen)	2	81034107	
81034210	Turbine Aeroplane Aerodynamic Structures & Systems (5) (Hydraulic and Oxygen) (Workshop)	2		81034209
81054207	On Job Training	7	300 hours life training	
Total		11		

Description of Courses offered by the

Course Number Course Title Credit Hours (Prerequisite)

23052108 Aviation Law and Air Safety 3 Credit Hrs.

International Agreements and Organizations, Airworthiness of Aircraft, Aircraft Nationality and Registration Marks, Flight Crew Licensing, Rules of the Air, Instrument Procedures-Departures, Aircraft Accident and Incident Investigation, Control of Aircraft, Air Traffic Services, Search and Rescue, Security.

52021112 Mathematics for Aviation Students 2 Credit Hrs.,

Arithmetic, types of Fractions, Decimals, Percentages, Mean, Median, Mode and Range, Angles which includes definitions and conversions, types of angles, Triangles, Areas and Volume of Common Shapes, Surface Area and Volume of Common Solids, Common Conversions, Algebra, Transposition, Linear Equations, Indices and Powers, Standard Form, Number Systems which includes binary, decimals, octal, and hexadecimals, Simultaneous Equations, Quadratic Equations, types of Logarithms, Geometry, Trigonometry, Coordinates and Graphs, Cartesian and Polar Coordinates.

55011211 Advanced English Language (1) 3 Credit Hrs.

This Course is designed to enhance students' English language skills in listening, speaking, reading and writing, in addition to vocabulary and pronunciation. The Teacher's resource book provides teachers with classroom activates that supplement the material in the student's book. The workbook contains activities for extra practice in listening, grammar, writing, and vocabulary, an audio CD is included for use in the listening section.

55012112 Advanced English Language (2) 3 Credit Hrs. Prerequisite: 55011211

This Course is designed for intensive English language skills in listening, speaking, reading and writing, in addition to vocabulary and pronunciation. The course employs traditional methods of language teaching and interactive multimedia instruction to develop practical academic skills. an audio CD is included for use in the listening section.

55011212 Communication Skills and Technical Writing 3 Credit Hrs. Prerequisite: 55011211

Technical Writing Documents & Elements, Report Components, Design & Visuals, Correspondence, Job Search and Application, Research & Documentation, Organization, Writing and revision.

55012114 Specialized English Language 3 Credit Hrs. Co-requisite 55012112

Design and innovation, Manufacturing techniques, Frameworks, Control systems, Engine and fuel systems, Safety and emergency, Air and gas, Electrical systems.

55041108 Physics for Aviation Students 2 Credit Hrs.

The nature of matter, the components of atoms, state of matter, Statics which includes mass, force and weight, stress, stress, strain and Hook's law, nature and properties of solid, liquids and gas, as well pressure and forces and buoyancy, Kinetics linear motion, kind of motions, Dynamics include newton's laws, motion in a circle, friction, work energy, power and torque, Fluid Dynamics at the atmosphere, density, specific gravity, compressibility, viscosity and bernoulli's principle, Thermodynamics, Optics (Light), Wave Motion and Sound.

55041209 Physics Lab. for Aviation Student 1 Credit Hr. Co-Requisite: 55041108

The student will be able to carry out the following practical applications: Vectors, linear movements, projectile, Newton second law, friction, Impacts, rotating motion.

81001101 Theory of Flight 3 Credit Hrs.

Why We Have to Do Maintenance, Development of Maintenance Programs, Aviation Industry Certification Requirements, Documentation for Maintenance, Technical Services, Technical Publications.

81001102 Aircrafts Types and Performance 3 Credit Hrs.

Single Engine Class B Aircraft –Take Off, Single Engine Class B-Climb, Single Engine Class B-En-Route & Descent, Single Engine Class B-Landing, Multi-Engine Class B-Take Off, Multi Engine Class B-EN-Route & Descent, Multi-Engine Class B –Landing, Class A Aircraft –Take Off, Class A: Additional Take Off Procedures, Class A: Take Off Climb, Class A: En Route, Class A: Landing.

81002104 Basic Aerodynamics 3 Credit Hrs. Prerequisite: 55041108

Physics of the Atmosphere, Airflow, Aerodynamics, Aerodynamic and Geometric Definitions, Drag, Lift, Stall, Lift Augmentation, Wing Planforms, Flight Controls, Flight Forces, Basic Manoeuvres, Flight Stability and Dynamics.

81002205 Basic Aerodynamics 1 Credit Hr., Co-Requisite: 81002104

The students can be able to carry out the following practical applications: Using air flow bench apply the following Experiments, Drag Flow Apparatus, Flow Visualization Apparatus, Bernoulli's Equation Apparatus, Multi tube Manometer panel, Boundary layer Apparatus, locating primary controls and operating cabin controls, Airflow patterns in real fluids aerofoil, description and operation of Rudder, tap Elevator control system, Flaps, Aileron and tab, and Spoiler system operational check.

81002203 Aircraft Maintenance Management 3 Credit Hrs.

Why We Have to Do Maintenance, Development of Maintenance Programs, Aviation Industry Certification Requirements, Documentation for Maintenance, Technical Services, Technical Publications.

81012201 Materials and Hardware (1) 2 Credit Hrs. Prerequisite: 55041108

Materials Testing, Aircraft Materials–Ferrous, Aircraft Materials–Non-Ferrous, Plastics and Elastomers, Composites, Wood and Wood Structures, Fabric Covering, Corrosion, Fasteners, Screw threads, Bolts, studs and screws, Locking devices, Aircraft rivets.

81012202 Materials and Hardware (1) workshop 1 Credit Hr. Co-Requisite: 81012201

The student will be able to carry out the following practical applications: Assemble sheet plat using solid rivets, how to discriminate between different types of corrosion, Manual corrosion removal, Using different types of precision measuring tools such as verniare calliper.

81012203 Materials and Hardware (2) 2 Credit Hrs. Prerequisite: 81012101

Rigid, Semi-Rigid and Flexible Pipes and Unions, Springs, Types of Bearings, Transmissions which includes Belts, Pulleys, gears and Chains, Control Cables, Types of Electrical Cables and Connectors.

81012304 Materials and Hardware (2) workshop 1 Credit Hr., Co-Requisite: 81012203

The student will be able to carry out the following practical applications: Cutting lines using pipe cutting tools, flaring rigid lines, discriminate between different types of bearings, testing control cables, Assemble and disassemble lines.

81011205 Human Factors 1 Credit Hr.,

This course contains the following topics General, The need to take human factors into account, what is "Human Factors"?, the shell model, Incidents attributable to human factors human error, 'Murphy's' law, Human Performance and Limitations, Vision, Hearing, Information processing, Claustrophobia and physical access and fear of heights, Social Psychology, Motivation and de-motivation, Peer pressure, 'Culture' issues, Personality Types, Team working, Management, supervision and leadership, Maintenance Resource Management, Physical Environment, Stress, Time pressure and Deadlines, Workload – Overload and Underload, Sleep, Fatigue and Shift Work, Alcohol, Medication and Drug Abuse, Diet and Nutrition, Physical Environment, Noise and fumes, Illumination, Climate and temperature, Motion and vibration, Working environment, Tasks, Physical work, Repetitive tasks, Visual inspection, Complex systems, Communication, Within and between teams, Work logging and recording, Keeping up to , currency, Dissemination of information, Human Error, Error models and theories, Types of error in maintenance tasks, Implications of errors (i.e. accidents),Avoiding and managing errors, Hazards in the Workplace, Recognising and avoiding hazards, Dealing with emergencies, Risk Assessment.

81011206 Aviation Legislation 2 Credit Hrs.,

CARC duties & responsibilities, aircraft regulated by CARC, International Civil Aviation Authority (ICAO), European Aviation Safety Agency (EASA), Role of the Member States, Certifying Staff—Maintenance, Categories of license, Certification Privileges, The Basic License - Knowledge Requirements, Type Ratings, Examination Standards and Requirements, Applying for the License.

Approved Maintenance Organisations, Personnel, Certifying Staff and Support Staff, Equipment, Tools and Materials, Acceptance of Components, Maintenance Data, Production planning, Certification of Maintenance, Maintenance Records, Maintenance Procedures and Quality Systems, Administration of Part-145, Non-Commercial Air Transport Maintenance Organisations, Air Operators Certificates, Operators Responsibilities, Aeroplane Maintenance, Manuals, Logs and Records, Transport of Dangerous Goods by Air, Aircraft Certification, Design Organisation Approval (DOA), Supplemental Type Certification, Certificate of Registration, Certificate of Airworthiness, Aircraft Radio Station Licence and Approval, Components, Non-Commercial Air Transport Maintenance Organisations, Continuous Airworthiness Maintenance Organisation (CAMO), Certificate of Release to

Service; Aircraft Airworthiness, Light Aircraft Maintenance, Safety Critical Maintenance Tasks, Inspections, Airworthiness Directives (ADs), Service Bulletins, Manufacturers Service Information, Modifications and Repairs.

81022101 Electrical Fundamentals (1) 2 Credit Hr., Prerequisite55041208

Electron Theory, Static Electricity and Conduction which include charged bodies, Coulomb's Law of Charges and Conduction of Electricity in Solids, Liquids and a Vacuum, Electrical Terminology which include Electrical Energy, Electrical Charges, Electric Current, Electrical Resistance, Conductance and Electrical Laws, Generation of Electricity which includes Voltage Produced by Friction, Voltage Produced by Pressure, Voltage Produced by Heat, Voltage Produced by Light and Voltage Produced by Chemical Action, DC Sources of Electricity, DC Circuits, Resistance/Resistor, Power, Capacitance/Capacitor.

81022102 Electrical Fundamentals (1) Lab. 1 Credit Hrs., Co-Requisite: 81022101

The student will be able to carry out the following practical applications: Measuring DC voltage using multimeter, Measuring DC current using multimeter, measuring resistance using multimeter, connecting loads in parallel and series, Assemble and disassemble DC generators. Testing coils and capacitors

81022203 Electrical Fundamentals (2) 2 Credit Hrs., Prerequisite: 81022101

This course contains the following topics Magnetism, Inductance/Inductor, DC Motor / Generator Theory which include Principles of Operation, Basic D.C. Motor, D.C. Motor Construction, Armature Reaction, Types of D.C. Motors, Back-EMF, Types of Duty, Reversing Motor Direction, Motor Speed, Energy Losses in D.C. Motors, Inspection and Maintenance of D.C. Motors and Starter-Generator Systems, AC Theory, Resistive (R), Capacitive (C) and Inductive (L) Circuits, Transformers which include: Basic Operation of a Transformer, The Components of a Transformer, Core Characteristics, Transformer Windings, Schematic Symbols for Transformers, How a Transformer Works, Turns and Voltage Ratios, Effect of a Load, Mutual Flux, Turns and Current Ratios and Step-Up and Step-Down Transformers, Filters, Types of AC Generators, Types of AC Motors.

81022204 Electrical Fundamentals (2) Lab. 1 Credit Hr. , Co-Requisite: 81022203

The student will be able to carry out the following practical applications: Measuring AC voltage using multimeter, Measuring AC current using multimeter, Measuring the transformer output, measuring inductive and capacitive loads, Assemble and disassemble AC generators, Connecting filters.

81022205 Electronic Fundamentals 2 Credit Hrs., Prerequisite: 55041208

Semiconductors, Solid-State Devices, Diodes, Transistors, Integrated Circuits, Printed Circuit Boards, Servomechanisms, Desynn and Magnesyn Systems which includes Basic Desynn System, Micro-Desynn Systems,

Slab Desynn System, Typical Desynn Faults and Magnesyn System, Torque Synchros which includes Synchro Classification, Synchro Codes, Synchro Construction, Synchro Characteristics, Theory of Operation, Synchro Torque, Transmitter, Synchro Torque Receiver, Torque Synchro System,Torque Differential Synchro Systems, Synchro Faults - Symptoms and Causes and Multispeed Synchro Systems, Control Synchro Systems, Categories of Control Systems which include Open Loop and Closed Loop.

81022206 Digital Techniques & Electronic Instrument Systems 2 Credit Hrs., Prerequisite: 55041208

Electronic Instrument Systems, Numbering Systems, Data Conversion, Data Buses, Logic Circuits, Basic Computer Structure, Fibre Optics Description, Fibre Optic Concepts, Optical Fibres and Cables, Optical Splices, Connectors and Couplers, Fibre Optic Measurement Techniques, Optical Sources and Fibre Optic Transmitters, Optical Detectors and Receivers, Electronic Displays, Electrostatic Sensitive Devices, Software Management Control, Electromagnetic Environment, Typical Electronic/Digital Aircraft Systems.

81032301 Turbine Aeroplane Aerodynamic Structures & Systems (1) (Theory of Flight and Airframe Structure) (2 Credit Hrs. , Prerequisite: 81012201

Aeroplane Aerodynamics and Flight Controls, High Speed Flight, Airframe Structures, Fuselage, Wings, Stabilisers, Flight Control Surfaces, Nacelles/Pylons.

8103202 Turbine Aeroplane Aerodynamic Structures & Systems (1) (Theory of Flight and Airframe Structure) (Workshop) 1 Credit Hr ., Co-Requisite: 8103201

The students can be able to carry out the following practical applications: Airflow patterns in real fluid around aerofoil, description and operation of Rudder and tap, Elevator control system, Flaps, Aileron and tab, and passenger/ crew door, Spoiler system operational check, Painting aluminum sheet according to aircraft manual, Balancing of aileron surface, Inspect emergency ground escape hatch, Inspect wing exterior, Inspect wing tips, wing front spar, leading edge skin, rib and stiffeners.

81033103 Turbine Aeroplane Aerodynamic Structures & Systems (2) (Instruments & Avionics) 2 Credit Hrs. Prerequisite: 81032301

Instrument Systems, Aircraft Indicating Systems – General, Pressure Measuring Instruments, Temperature Measurement, Quantity Indication System, Stall Warning and Angle of Attack Systems, Pitot-Static Systems, Altimeters, Vertical Speed Indicator (VSI), Airspeed Indicator (ASI), Temperatures, Mach Speed, Air Data Computer, Gyroscopic Instruments, Magnetic Compasses, Autoflight, Communications, On Board Maintenance

Systems, Central Maintenance System (CMS), Built In Test Equipment (BITE) Philosophy, Aircraft Condition Monitoring System (ACMS), Ground Support Equipment (GSE), Data Loading Systems, Electronic Library System (ELS), Airborne Printer, Structure Monitoring.

81033104 Turbine Aeroplane Aerodynamic Structures & Systems (2) (Instruments & Avionics) (Workshop) (1 Credit Hr., Co-Requisite: 81033103

The students can be able to carry out the following practical applications: Pitot static system leakage test, purging pitot and static lines, Removal and installation of pitot and static head, Testing of Mach and airspeed warning system, Instrument panel removal and installation, Stall warning transducer vane heaters operational check, and Removal and installation of flap travel monitor switch.

81033205 Turbine Aeroplane Aerodynamic Structures & Systems (3) (Electric Power) (2 Credit Hrs., Prerequisite: 81033103

Electrical Power, Batteries, Direct Current (DC) Generation, Alternating Current (AC) Generation, Voltage Regulation, Constant Speed Drive Unit (CSDU) and Integrated Drive Generator (IDG), Brushless Generator, Variable Speed Constant Frequency (VSCF) Generators, Emergency Power Generation, Transformer Rectifiers, Inverters, Power Sources Summary, External/Ground Power, Electrical Power Distribution, Generator / Busbar Connection and Disconnection, Circuit Protection, Electrical Distribution Systems, Reactive and Real Load Sharing, AC Load Shedding, Fault Protection, Built In Test Equipment (BITE), Flightdeck Controls and Indication, Lights.

81033206 Turbine Aeroplane Aerodynamic Structures & Systems (3) (Electric Power) (Workshop) (1 Credit Hr., Co-Requisite: 81033205

The students can be able to carry out the following practical applications: Removal and installation of battery, Removal and installation of feeder protection relays, Removal and installation of battery temperature sensor, Removal & installation No. 1 & No. 2 Inverters, Discharging and disassemble of battery, Checking battery temperature sensor resistance, Battery maintenance following an over temperature condition, and Operational check of AC power generation system lights and AC power generation system, Charging battery, Testing battery system, the flood light system, the thunder storm lights, the caution-warning and indicating light system, landing and taxi lights, ice checks lights, anti-collision, strobe and position lights, the cockpit dome light, cockpit utility lights, indirect lights, and emergency light, removal and installation of Caution and warning panel, strobe lights, and lower anti-collision light assembly, and Adjusting landing and taxi light.

81034107 Turbine Aeroplane Aerodynamic Structures & Systems (4) (Air Conditioning, Fuel and Flight Control) (2 Credit Hrs., Prerequisite: 81033205

Air supply, Air Conditioning, Pressurisation, Safety and Warning Devices, Equipment and Furnishings, Emergency Equipment, Emergency Evacuation, Cockpit, Seat Belts and Shoulder Harnesses, Cabin, Galleys, Lavatories, Cargo Compartments, Passenger Service Units (PSU), Airstairs, Cabin Entertainment Systems, Requirements for Fire, Fire Detection Systems, Maintenance Practices, Smoke and Flame Detectors, Fire Zones, Fire-Extinguishing Systems, Fire Protection Systems, Engine Fire Extinguishing Systems, Flight Controls, Fuel Systems.

81034108 Turbine Aeroplane Aerodynamic Structures & Systems (4) (Air Conditioning, Fuel and Flight Control) (Workshop) (1 Credit Hr., Co-Requisite: 81034107)

The students can be able to carry out the following practical applications: Removal and installation of engine bleed air shutoff valve, emergency bleed air shutoff valve, cabin pressure regulator, water separator, refrigeration unit, crew seat, safety belt inertia reel, direction valve, control units, fire extinguishing system discharge indicator disks, Fire-extinguishing cartridges HTL industries INC, Fire-extinguishing cartridges- KIDDE bottle, agent container, discharge valve KIDDE bottle, aileron, pressure refueling line check valve assembly, fuel pressure sensing switch, and fuel flow indicator, Inspection of extinguishing system double checkout "T" valve, and fire-extinguishing system direction valve, Check-out of fire-extinguishing system, horizontal stabilizer trim system, and fuel system and boost cross feed valve, Operational check of fire detecting system, and gust lock.

81034209 Turbine Aeroplane Aerodynamic Structures & Systems (5) (HYD, L. Gear, Oxygen and De– Icing) (2 Credit Hrs., Prerequisite: 81034107)

Hydraulic Power Theory of Operation, System Layout, Hydraulic Fluids, Hydraulic Pumps, Emergency and Auxiliary Pressure Generation, Hydraulic System Components, Control, Indication and Warning, Ice Formation, Ice Detection, Anti-Icing/De-Icing Systems, Engine Anti-Ice Systems, Windshield De-icing and Anti-icing Systems, Windshield Wiper System, Rain Repellent System, Probes and Drain Heating, Potable and Waste Water Heating Systems, Main Landing Gear, Nose Landing Gears, Shock Strut, Extension and Retraction, Indication and Warning, Wheels, Aircraft Tyres, Aircraft Brakes, Hydraulic Braking Systems, Anti-Skid Systems, Auto Brake System, Steering, The Need for Oxygen, Crew Oxygen Systems, Passenger Oxygen System, Portable Oxygen, Safety Considerations, Maintenance, Vacuum Systems, High Pressure Pneumatic Systems, Low Pressure Pneumatic Systems, Water/Waste System Lay-out, Potable Water System, Waste Water System, Toilet System.

81034210 Turbine Aeroplane Aerodynamic Structures & Systems (5) (HYD, L. Gear, Oxygen and De– Icing) (Workshop) (1 Credit Hr., Co-Requisite: 81034209)

The students can be able to carry out the following practical applications: Remove and install of hydraulic pressure switches, hydraulic pump motor, hydraulic pressure transmitter, windshield wiper blades, wiper converter unit, main wheels and brake assembly, oxygen-cylinders,oxygen regulator, and oxygen control valve, Operational check of hydraulic power system, airspeed pitot heater system, landing gear system, and windshield wiper system, Service hydraulic reservoir, hydraulic power system accumulators, and shock strut, Perform functional test of anti-skid system, and Inspect nose landing gear steering system.

81043101 Gas Turbine Engine (1) 3 Credit Hrs., Prerequisite: 81032301

The "Choked" Nozzle, The Rocket and the Ram Jet, The Turbojet Engine, Engine Performance, Thrust, Power Measurement in Turboprop Aircraft, Efficiency, Thrust Factors, Engine Ratings, Inlet, General, Ram, Intake Design, Supersonic Intakes, Intake Ice Protection, Compressor Pressure Ratio, Types of Compressor, Axial Flow Compressors, Compressor Stall and Surge, Combination Compressors, Combustion Section, Components, Combustion Process, Combustion Chamber Cooling, Carbon Formation, Materials, Design Requirements, Types of Combustion Systems,Turbine Section, Types of Turbine, Turbine Construction, Turbine Blade Cooling, Shrouded and Knife Edge Turbine Blades, Turbine Blade Attachment, Active Clearance Control, Exhaust, Function, Construction, Noise Suppression, Thrust Reversers, Bearings and Seals, Bearings, Seals, Lubricants, Sources Of Supply, Lubrication, Property of Oils, Oil Additives, Oil Types, Oil Contamination, Alternative Lubricating Oils, International Fuel Specifications, General Requirements, Listed Properties, Types of Aviation Fuels, Refueling/defueling and Fuel Tank Work Safety Precautions, Fuel Contamination. Lubrication Systems, Basic Requirements, Pressure Relief Valve System, Full Flow System, Total Loss System, Types of Bearing Lubrication, Components, Fuel Cooled Oil Coolers, Air-Oil Separation, Anti-Static Leak Check Valve, Vent Sub-System, Chip Detectors. Principles of Fuel Metering, Hydro-Mechanical Control Units, Proportional Flow Control, Proportional Flow Control, Acceleration Control Units, Engine Protection Devices, Systems, Fuel Nozzles, Effect of a Change of Fuel, Electronic Engine Control (EEC), Full Authority Digital Engine Control.

81043102 Gas Turbine Engine (1) (Workshop) 1 Credit Hr., Co-Requisite: 81043101

The students will be able to carry out the following practical applications: Inspection of powerplant, Removal and installation of LH engine anti icing solenoid valve, Inspection of combustion chamber, Inspection of turbine casing assembly, Inspect first stage turbine nozzle assembly, Removing and installing of engine aft nacelle fairing, Inspect exhaust cone, Bearing inspection, cleaning and handling, Removal and installation of pressure filter element, Remove, inspect and install engine main oil filter, Check engine oil level, Removal /installation scavenge strainer elements, Removal and installation fine scavenge filter element, Remove and reinstall fuel pump

pressure and tap hoses, Removal/installation engine fuel control unit screen, Remove, cleaning &install fuel pressurizing & dump valve inlet screen, Inspection of fuel manifold assembly.

81043203 Gas Turbine Engine (2) 3 Credit Hrs., Prerequisite: 81043101

Air Systems Engine Bleed Air, Cooling, External Air Tapping's, Internal Sealing, Clearance Control, Control of Axial Bearing Loads, Hot Air Anti Ice Systems, Starting and Ignition Systems Start Sequence, Starters, Ignition Systems, Igniter Plugs, Handling of Ignition Units and Igniter Plugs, Engine Indication Systems Cockpit Displays, Temperature Measurement; Exhaust Gas Temperature, Pressure Measurement, Engine Thrust Indication, Oil Quantity Measurement, Fuel Flow Indication; Engine Speed; Vibration Indication Systems, Torque Indicating System, Types of Thrust Augmentation, Turbo-prop Engines, Single Shaft / Gear Coupled / Direct Coupled Turbine, Free Turbine / Power Turbine, Reduction Gears, Engine Controls, Hydro Mechanical Fuel Control System, FADEC Control System; Turbo Prop Instrumentation, Over speed Safety Devices; Turbo-shaft engines Configurations, Engine Control System, Auxiliary Power Units (APU) APU Control and Monitoring, Engine Mounts, Engine Drains, Engine Controls, Engine Build Unit, Fire Prevention – Bays or Zones, Installing and Removing Engines, Fire Protection, Fire Detection Systems, Fire Extinguishing Systems, Engine Monitoring and Ground Operation.

81043204 Gas Turbine Engine (2) (Workshop) 1 Credit Hr., Co-Requisite: 81043203

The students will be able to carry out the following practical applications: Removing and installing engine spark plug; Ignition system limits; Remove and install engine ignition unit out board side; Test engine ignition system; Check for grounded thermocouple leads; Check tachometer indicating system; Tachometer generator resistance and continuity check; Demonstrate reheat system (afterburner) operation; I.G.Vs Actuator house assembly removal & installation; Starting fuel manifold removal, inspection and installation; Fuel control air pressure sensing hose removal & installation; Starting fuel hose assembly and check valve removal and Installation; Removal, inspection and installation of engine chip detector; Removal, inspection and installation of fuel inlet strainer, cover, and servo supply filter; Auxiliary power unit starting; APU description; Foreign object damage (FOD) prevention in APU; Engine access door removal and installation; Removal and installation of direction valve; Inspection of fire-extinguishing system direction valve; Check-out of fire-extinguishing system; Testing fire protection system Description of fire extinguishing system operation; Inspection of extinguishing system double checkout "T" valve fire.

81043205 Piston Engines 2 Credit Hrs., Prerequisite: 81053101

Development of power, The Otto Engine, Two Stroke Engine; Diesel Engines, Linear Measurements, Compression Ratio, Efficiencies, what is Power? Measurement of Power, Factors Affecting Power, Constructional Arrangements, Crankcases, Camshafts, Connecting Rods, Cylinders, Pistons, Valve Mechanisms, Propeller Reduction Gearboxes, Power Take-Off Provision, Carburettors; Intake Icing, Fuel, The Float Chamber Carburettor,

Fuel Injection Systems, Construction and Operating Principles, Typical Pressure Injection Carburettor, High Tension (HT) Ignition System, Magnetos, Ignition Leads(ht), Spark Plugs, Auxiliary Ignition Systems, Ignition Timing, Starters, Induction, Exhaust and Cooling Systems Engine Exhaust Systems, Cylinder Cooling, Induction System, Supercharging / Turbo charging, Aspirated Engines, Types of Lubrication, Oil Viscosity, Selection and Properties of Oil, Fuels, Grades, Octane and Lead, Avgas, Mogas, Diesel, Lubrication Systems, Lubrication, Other Oil Functions, Wet Sump System, Dry Sump System, Lubrication Supply - Oil Distribution, Engine Indicating Systems, Pressure Measurement, Measurement of Temperature, Engine Removal and Replacement.

81043206 Piston Engines (Workshop) 2 Credit Hrs. , Co-Requisite: 81043205

The students will be able to carry out the following practical applications: Perform Valve clearance adjustments, Inspect, check cylinder assembly, Install Cylinder assembly, Remove and install rocker box cover& gaskets, Inspect connecting rod, Inspect crankshaft, Inspect cylinder barrel, Inspect crank case, Inspect and service reciprocating engine carburetor, Remove, inspect and install reciprocating engine induction system, Disassemble , reassemble turbocharger components, Inspect cylinder cooling fins, Remove , Inspect and reinstall spark plug, Remove ,inspect reciprocating engine starter, Remove service and inspect magneto, Remove ignition harness, Remove, install oil pipe, Remove ,service oil filter, Inspect ,service reciprocating Engine Exhaust System, remove, inspect and reinstall propeller.

81044107 Propellers 3 Credit Hrs ., Prerequisite: 81053101

Propeller Configuration, Modern Developments in Propeller Configuration, Propulsive Force, Propeller Terms, Effective Pitch, Geometric Pitch and Slip, Right and Left Handed Propellers, Angle of Attack, The Blade Element, Blade Angle and Blade Pitch, Blade Twist, Forces on a Blade Element, Variation of Fixed Pitch Propeller Efficiency with Speed, Windmilling, Feathering, Reverse Thrust, Propeller Solidity, Forces Acting on the Propeller, Pitch Range, Propeller Clearances, Handling Effects - Single Engine Aircraft, Thrust and Power Development, Turboprop Configurations, Vibration Forces and Resonance, Nomenclature, Propeller Types, Composite Propeller Blades, Classes of Propeller, Fixed-Pitch Propeller, Ground-Adjustable Propeller, Two Pitch Propellers, Single Acting Propeller, Double Acting Propellers, Propeller Installation, Spinner Installation, Installation Procedures, The Variable-Pitch Propeller, Types of Hydraulic Pitch-Change Mechanisms, Single Acting Propellers, Single Acting Full-Feathering and Constant-Speed Governing Systems, Double-Acting Propeller, Fine Pitch Stops, Hydraulic Pitch Lock, Auto Coarsening, Reverse Thrust, Hamilton Standard Propeller – Principle of Pitch Change Operation, Beta Control, Electrically Operated Propellers, FADEC Controlled Propellers, Synchronizing, Synchrophasing, Fluid Anti-Icing, Electrical De-Icing/Anti Icing, Blade Repairs, Maintenance Practices, Testing and General Repair Information, Propeller Vibration and Balance, Engine Control, Engine Operation, Instrumentation, Engine Running Procedures.

81044108 Propellers (workshop) 1 Credit Hr. , Co-Requisite: 81044107

The students can will be able to carry out the following practical applications: Distribution or (Twist) of Blade pitch, acting of forces on the propeller, Pitch of Propeller, Varying the pitch propeller and blade angles, Performing propeller Tracking.

81053101 Maintenance Practices (1) 3 Credit Hrs. , Prerequisite: 81012203

Safety Precautions—Aircraft and Workshop, Workshop Practices, Tools, Common hand tool, Common Power Tools, Precision Measuring Instruments, Lubrication Equipment and Methods, Electrical General Test Equipment, Avionic General Test Equipment, Engineering Drawings, Diagrams and Standards, Microfilm, Microfiche and Computerized Presentations, Air Transport Association Specification - ATA No. 100, Common Aeronautical and Other Standards, Fits and Clearances, Dimensions, Allowances and Tolerances, Drill Sizes for Holes, Classes and Standards of Fits and Clearances, Ovality, Bow and Twist, Electrical Wiring Interconnection system (EWIS), Continuity and Insulation Testing, Use of Crimping Tools, Testing of Crimped Joints, Connector Pin Removal and Insertion, Coaxial Cables, Wire Types and their Identification, Wiring Protection Techniques, Wire Performance, Inspection Criteria and Damage Tolerance, Inspection of Electrical Wiring Interconnection Systems (EWIS).

81053102 Maintenance Practices (1) (Workshop) 2 Credit Hrs., Co-Requisite: 81053101

The student will be able to carry out the following practical applications: Inspection of aileron cable, removing rivet by using power and hand tools, Use test meters to measure volts, amps and resistance in practical task circumstances, measuring outside diameter using micrometer, Inspect brake for wear limit, Crimping contacts for connectors.

81053203 Maintenance Practices (2) 3 Credit Hrs., Prerequisite: 81053101

Riveting, Solid Riveting, Blind and Special Fasteners, Pipes and Hoses, Bending and Flaring Aircraft Pipes, Inspection and Testing of Pipes and Hoses, Installation and Clamping of Pipes, Springs, Bearings, Handling and Cleaning of Bearings, Bearing Lubrication Requirements, Inspection of Bearings, Storage, Transmissions, Control Cables, Swaging of End Fittings, Handling, Inspection and Testing of Control Cables and Associated Hardware, Bowden and Teleflex Cable Systems, Material Handling, Sheet Metal, Composite.

81053204 Maintenance Practices (2) (Workshop) 1 Credit Hr. , Co-Requisite: 81053203

The student will be able to carry out the following practical applications: Removal Rivet, repair Flush patch, repair Stringer, Install and rivet countersunk rivets in aluminium sheet, Inspection and testing of aircraft hoses, Lubrication of side brace idler link spring assembly, lubrication Nose landing gear, Inspection of pulleys, inspect gear for backlash, check control cables tension while rigging elevator control system, Remove installing and adjusting parking brake control cable.

81054105 Maintenance Practices (3) 3 Credit Hrs., Prerequisite: 81053203

Welding, Brazing, Soldering and Bonding, Welding, Soldering, and Bonding, Aircraft Weight and Balance, Aircraft Handling and Storage, Disassembly, Inspection, Repair and Assembly Techniques, Abnormal Events, Types of Abnormal Occurrences, Inspections Following Lightning and High Intensity Radiated Fields (HIRF), Inspections After Heavy Landings and Flight Through Turbulence, Maintenance Procedures, Maintenance Planning, Modification Procedures, Stores Procedures, Certification / Release Procedures, Interface With Aircraft Operation, Maintenance Inspection / Quality Control and Assurance, Additional Maintenance Procedures, Control of Life-Limited Components.

81054106 Maintenance Practices (3) (Workshop) 1 Credit Hr., Co-Requisite: 81054105

The student will be able to carry out the following practical applications: Inspection of complete welding, perform long time parking, Check & replenish hydraulic systems, Connect and use external electrical power, troubleshooting wing flaps, Remove and reinstall internal and external lamps / bulbs, Remove and reinstall static discharge wick, Inspect radio altimeter antenna interior and exterior doublers, and fuselage skin in the area>

810542017 On Job Training 7 Credit Hrs., 300 hours life training

Includes all the practical activities which are carried out in the aircraft maintenance hangar &workshops such as aircraft jacking, ground handling, A/C systems inspections, functional operations, maintenance & repair trouble shooting, components replacement and testing using all required special tools, ground equipment's and training manuals in addition to adhere to all safety requirements while working on all aircraft components and each of the following systems.

- Electrical & Electronics Systems
- Digital Instruments Systems

- Engine Systems
- Pneumatic and hydraulics Systems
- A/C Fuel Systems
- Flight control Systems
- Environmental Systems
- A/C Structure Repair & Design.