Curriculum for Associate Degree in Airports Electrical Systems Specialization

The Curriculum of associate degree program in "Airports Electrical Systems" specialization consists of (72 credit hours)as follows:

Serial No.	Requirements	Credit Hours
First	University Requirements	12
Second	Program Requirements	17
Third	Specialization Requirements	43
Total		**72**

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

Curriculum of associate degree in Airport Electrical Systems Specialization

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

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

Second: Engineering Program requirements (17 credit hours) as follow:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20201111	Engineering Workshop	1	–	3	
20204111	AutoCAD	2	–	6	21702101
20506111	Occupational Safety	2	2	–	
21301111	General Mathematics	3	2	2	
21302111	General Physics	3	2	2	
21302112	General Physics Lab.	1	-	3	21302111
21702111	Communication Skills and Technical Writing	3	2	2	22002101
20201121	Engineering Materials	2	2	-	
Total		**17**	**10**	**18**	

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

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20301113	Electrical Circuits	3	3	--	-
20301114	Electrical Circuits Lab	1	--	3	20301113
20403111	Electronics	3	3	--	20301113
20403112	Electronics Lab	1	--	3	20403111*
20303116	Engineering Software	1	--	3	21702101
20303121	Power Supply Systems in the Airports	2	2	---	-
20303128	Airfield Measurements and Instrumentations Workshop	1	--	3	-
20303223	Electrical Machines	3	3	--	20301113
20303224	Electrical Machines Lab	1	---	3	20303223*
20303231	Airport Lighting Systems 1	2	2	---	-
20303233	Airport Lighting Systems 2	3	3	---	20303231
20303234	Airport Lighting Systems Lab	1	--	3	20303233*
20303271	Terminals Electro-Mechanical Equipment	3	3	-	20303223
20303161	Flight Navigation Systems	2	2	-	-
20304241	Protection and Control Devices	2	2	-	-
20304242	Protection and Control Devices Lab	1	-	3	20304241*
20303251	Automation Control Technology	3	3		20404121
20303252	Automation Control Technology lab	1	-	3	20303251*
20404121	Digital Fundamentals	2	2	-	-
20404122	Digital Fundamental Lab	1	-	3	20404121*
20303291	Training**	3	-	-	-
20303292	Project	3	-	-	-
Total		**43**	**28**	**27**	

* Co-requisite

** Equivalent to 280 training hours

Guiding Plan

First Year					
First Semester			Second Semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
20201121	Engineering Materials	2	20204111	AutoCAD	2
20506111	Occupational Safety	2	20303121	Power Supply Systems in the Airports	2
22002101	English Language	3	20303116	Engineering Software	1
21301111	General Mathematics	3	21302111	General Physics	3
20301113	Electrical Circuits	3	21302112	General Physics Lab	1
20301114	Electrical Circuits Lab	1	20403111	Electronics	3
21702101	Computer Skills	3	20403112	Electronics Lab	1
20201111	Engineering Workshop	1	20404121	Digital Fundamentals	2
			20404122	Digital Fundamental Lab	1
			20303161	Flight Navigation Systems	2
Total		**18**	**Total**		**18**

Second Year					
Third Semester			Fourth Semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
20303223	Electrical Machines	3	20303233	Airport Lighting Systems 2	3
20303224	Electrical Machines Lab	1	20303234	Airport Lighting Systems Lab	1
20303231	Airport Lighting Systems 1	2	20303271	Terminals Electro-Mechanical Equipments	3
20304241	Protection and Control Devices	2	20303291	Training	3
20304242	Protection and Control Devices Lab	1	20303292	Project	3
21702111	Communication Skills and Technical Writing	3	20303128	Airfield Measurements and Instrumentation Workshop	1
22001101	Arabic Language	3	20303251	Automation Control Technology	3
21901100	Islamic Culture	3	20303252	Automation Control Technology Lab	1
Total		**18**	**Total**		**18**

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

Brief Course Description

Specialization Requirements

Course Title	Course No	Credit Hours (Theoretical /Practical)
Electrical Circuits	**20301113**	**3(3,0)**
Basic concepts and definitions. Electrical quantities. Circuits and circuit elements. Passive and active elements. Energy sources. Open circuits ,closed circuits, short circuits . Series, parallel and compound circuits. DC and AC circuit. Characteristics of sine waves. Basic calculation: current, voltage .voltage drop ,power. Energy, active power, reactive power, power factor. Three-phase circuits : basic configurations; phase/ line voltages and currents. Introduction to electrical measurements: devices, circuitry.		
Electrical Circuits Lab	**20301114**	**1(0,3)**
Measuring current ,voltages and power .DC series and parallel circuits. AC series and parallel circuit.		
Airfield Measurements and Instrumentations Workshop	**20303128**	**1(0.3)**
This course describes the principle and operation of measuring instruments, and how to measure the electrical and electronic quantities precisely, Airfield Instruments and Measurements, Power Meter and Calibrations Devices.		
Power Supply Systems in the Airports	**20303121**	**2(1.0)**
The main purpose of this course is to introduce the student with various types of power supplies and how to maintain and operate each of them in order to assure the availability of the electrical Current for each load in the airport		
Engineering Software	**20303116**	**1(0.3)**
The main purpose of this course is to introduce the student to the following topics: Manual electrical Engineering drawing, electrical block and wiring diagrams symbols of basic elements of electrical and electronic circuits devices and machines. Block diagrams of Electrical and Electronic Systems. Schemes' Reading. Electrical Drawing using computer techniques		
Automation Control Technology	**20303251**	3(3.0)
Introduction to MTS-88C microcomputer kit. Heathkit model 3400 microcomputer . .Microprocessors 6800 Hardware .Programming .I/O devices and Interfaces. PLC construction , I/O devices and Interfaces.S7-200 Programming and interfaces. Motor drives by Logic Gates , PLC and MICOCOMPUTERS .AIRFIELD Lighting control		

Automation Control Technology lab	**20303252**	1(0.3)
Introduction to MTS-88C microcomputer kit. Microprocessors 6800 Hardware .Programming .I/O devices and Interfaces. PLC construction, I/O devices and Interfaces.S7-200 Programming and interfaces. Motor drives by Logic Gates , PLC and MICOCOMPUTERS .AIRFIELD Lighting control .Heathkit 3400 Microcomputer.		
Terminal Electromechanical Equipment	**20303271**	**3(3.0)**
This course describes various types of equipment used by passengers as well as others. The student will be introduced with those equipment and to draw their block diagrams, and their principles of operation		
Flight Navigation System	**20303161**	**2(2.0)**
The main purpose of this course is to introduce the student with flight principles as well as the services air traffic , in addition how to deal with the main flight instruments , Communication and Navigational aids systems.		
Electrical Machines	**20303223**	**3(3.0)**
The main purpose of this course is to present the D.C\A.C electrical machines principles, characteristic, construction and drive techniques		
Electrical Machines lab	**20303224**	**1(0.3)**
To present the D.C\A.C electrical machines principles, characteristic, construction and drive techniques, as well as the student will be able to practice as detailed in lab course description		
Airport Lighting Systems (1)	**20303231**	**2(2.0)**
This course introduces the students with the basic principles, functions, lighting areas, lamps types, signs and markers as well as heliport lighting system of airfield lighting systems		
Airport Lighting Systems (2)	**20303233**	**3(3.0)**
As the students became aware of the basic principles, they will be introduced with the types, operation, construction of airfield lighting systems, and lighting systems used in other part of the airport		
Airport Lighting Systems Lab	**20303234**	**1(0.3)**
In order to be familiar with (ALS), the student will practice the following experiments : Precision Approach Path Indicator Systems (PAPI, APAI), The Runway End Identifier Lighting System (R.E.I.L.S), Constant Current Regulator (C.C.R), Uninterrupted Power Supply (U.P.S), Cables used in the Airfield Lighting Systems, Isolating Unit Transformers, Flashers used in the Airfield Lighting System, Basic principles of Remote Control System, Communication and Tower lighting Systems, Radar station and Naviaids station lighting system		
Protection and Control Devices	**20304241**	**2(2.0)**
The purpose of this course is to give the student the basic information and skills related to the most common control and protection devices. The student shall gain the experience of selection and wiring and troubleshooting different control and protection devices such as fuses, circuit breakers, relay, contactors, and switches		

Protection and Control Devices Lab	**20304242**	**1(0.3)**
The course aims at giving the students practical skills in order to select , wire troubleshoot and maintain the most common control and protection devices like fuses, circuit breakers , relays , contactors , timers , switches , and measuring transformers		
Electronics	**20403111**	**3(3,0)**
Study of the basic structure of atoms, semiconductors, diodes, special purpose diodes, the diode applications .characteristics and applications of electronics devices .Transistors (BJT & FET) , power amplifiers, oscillators, operational amplifiers, thyristor and other devices.		
Electronics Lab	**20303112**	**1(0.3)**
Lab in support of the electronics course, use the oscilloscope in measurements. Investigation of characteristics of semiconductor devices. Construction and study of electronics circuits . Experiments in electronics have to cover all electronic devices (diode, zener diode, diode applications, BJT,FET, op – amp, oscillator, SCR and other devices).		
Digital Fundamentals	**20404121**	**2(2.0)**
Numerical systems, operation , code, logic gates, Boolean algebra and logic simplification, combinational logic and function of combinational logic, flip-flops, counters, shift registers.		
Digital Fundamentals Lab	**20404122**	**1(0.3)**
Experiments in digital fundamentals have to cover logic gates, combinational logic, flip-flops, counters and shift registers.		
Training	**20303291**	**3 (280 training hours)**
Equivalent to (280 hours) of field training targeted to emphasize the ability of students to apply the theories in the real world of the profession.		
Project	**20303292**	**3**
An integrated assembly/design project to practice the principles of analysis and design acquired throughout the course of the student's study that related to the major fields of study.		