Curriculum for Associate Degree in Aeronautical Electronics

The curriculum of associate degree in **"Aeronautical Electronics "** specialization consists of (72 credit hours) as follows:

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

The study plan of associate degree in Aeronautical Electronics

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 follows:

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

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

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20404211	Microprocessors	3	3	0	20404121
20404212	Microprocessors Laboratory	1	0	3	20404211*
20602111	Electronic Devices and Circuits 1	3	3	0	20301113
20602112	Electronic Devices and Circuits 1 Laboratory	1	0	3	20602111*
20602211	Electronic Devices and Circuits 2	3	3	0	20602111
20602212	Electronic Devices and Circuits 2 Laboratory	1	0	3	20602211*
20605121	Soldering Techniques	1	0	3	
20405111	Principles of Telecommunications	3	3	0	20301113
20405112	Principles of Telecommunications Laboratory	1	0	3	20405111*
20405221	Antennas	3	3	0	20405111
20405222	Antennas Laboratory	1	0	3	20405221*
20602131	Pulse circuits	2	2	0	
20602132	Pulse circuits Laboratory	1	0	3	20602131*
20405232	Radar	3	3	0	20405111
20301113	Electrical Circuits	3	3	0	
20301114	Electrical Circuits Laboratory	1	0	3	
20602221	Fundamentals of Navigation and Communication	3	3	-	
20404121	Digital Fundamentals	2	2	-	20403111
20404122	Digital Fundamentals Laboratory	1	-	3	20404121*
20602291	Training**	3	0	-	-
20602292	Project	3	0	-	-
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**
20301113	Electrical Circuits	3	22001101	Arabic Language	3
20301114	Electrical Circuits Lab.	1	20605121	Soldering Techniques	1
22002101	English Language	3	20204111	AutoCAD	2
21702101	Computer Skills	3	21901100	Islamic Culture	3
21302111	General Physics	3	20602111	Electronic Devices and Circuits 1	3
21302112	General Physics Lab.	1	20602112	Electronic Devices and Circuits 1 Lab.	1
21301111	General Mathematics	3	21702111	Communication Skills and Technical Writing	3
20201111	Engineering Workshops	1	20404121	Digital Fundamentals	**2**
Total		**18**	**Total**		**18**

Second Year					
Third Semester			**Fourth Semester**		
Course No.	**Course Title**	**Credit Hours**	**Course No.**	**Course Title**	**Credit Hours**
20602221	Fundamentals of Navigation and Communication	3	20602211	Electronic Devices and Circuits 2	3
20404211	Microprocessors	3	20602212	Electronic Devices and Circuits 2 Lab.	1
20201121	Engineering Materials	2	20405221	Antennas	3
20405111	Principles of Telecommunications	3	20405222	Antennas Lab.	1
20405112	Principles of Telecommunications Laboratory	1	20602291	Training	3
20404122	Digital Fundamentals Laboratory	1	20602132	Pulse circuits Laboratory	1
20602131	Pulse circuits	2	20506111	Occupational Safety	2
20405232	Radar	3	20602292	Project	3
			20404212	Microprocessors Laboratory	1
Total		**18**	**Total**		**18**

Brief Course Description

University Requirements

Course Title	Course No	Credit Hours (Theoretical /Practical)
Arabic Language	**22001101**	**3 (3,0)**

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

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

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

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

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

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

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

Engineering Program requirements

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

Specialization Requirements

Microprocessors	**20404211**	**3(3,0)**
Introduction to microprocessors architecture , instruction set, assemblers and assembly language programming, software development ,microprocessors applications.		
Microprocessors Lab	**20404212**	**1(0,3)**
Data transfer, Arithmetic operations, looping, subroutines, general programs, applications.		
Electronic Devices and Circuits 1	**20602111**	**3(3,0)**
Semiconductor materials and PN junctions, diodes and applications, special diodes, transistors, power electronic devices.		
Electronic Devices and Circuits Lab. 1	**20602112**	**1(0,3)**
A comprehensive set exercises enabling the student to practice the theoretical knowledge gained in the classroom about semiconductors materials, PN junctions, Diodes and applications, special diodes, and transistors power electronic devices.		
Electrical Circuits	**20301113**	**3(3,0)**
Voltage, Current, and Resistance, Ohm's Law, Energy and Power, Series-Parallel Circuits, Introduction to Alternating Current and Voltage, Capacitors, Inductors, RLC Circuits and Resonance. Electrical Measurements.		
Electrical Circuits Lab.	**20301114**	**1(0,3)**
DC and AC circuits. Resonance. Measuring devices.		
Digital Fundamentals	**20404121**	**2(2,0)**
Study of numerical systems, theory of Boolean algebra and logic circuits, applications to different types of circuits, study of flip-flops, counters, registers and accumulators, digital system memory including ROM, RAM, and EPROM.		
Digital Fundamentals Lab.	**20404122**	**1(0,3)**
Testing and troubleshooting instruments, Logic circuits, adders, comparators, encoders and decoders, flip-flops, counters, registers, memories RAM, ROM, EPROM.		
Principles of Telecommunications	**20405111**	**3(3,0)**
Telecommunications link configuration, Frequency spectrum, measuring units and signal parameters, Modulation principles and types (AM, FM, PCM, Delta Modulation), and digital modulation, Transmitters and receivers.		
Principles of Telecommunications Lab.	**20405112**	**1(0,3)**
Amplifiers and Attenuators, Tuned circuits, filters, AM and FM modulation demodulation, demodulation, sampling, PCM, delta modulation.		

Antennas	**20405221**	**3(3,0)**
Fundamentals of EM waves, nature of microwave propagation and different effects, transmission lines, waveguides, basic antenna theory, parameters and types, practical antenna design.		
Antennas Lab	**20405222**	**1(0,3)**
Antenna currents, polarization, feeders, antenna types, antenna lengths, top loading, arrays.		
Pulse Circuits	**20602131**	**2(2,0)**
Rectangular waves, CR&LR circuits with rectangular waves input, clamping and clipping circuits, multivibrators, sawtooth generator, blocking oscillators, and Paraphase amplifiers.		
Pulse Circuits Lab.	**20602132**	**1(0,3)**
Pulse generation, pulse circuits, clamping circuits, sawtooth generation, multivibrators, blocking oscillator, Para-phase amplifiers.		
Electronic Devices and Circuits 2	**20602211**	**3(3,0)**
Small signal BJT and FET amplifiers, power amplifiers, amplifier frequency response, operational amplifiers, oscillators, and filters.		
Electronic Devices and Circuits 2 Lab.	**20602212**	**1(0,3)**
Amplifiers configuration and characteristics. Classes of Amplifiers, Differential Amplifier, Operational amplifiers .Filters .Oscillators.		
Radar		**3(3,0)**
Introduction to radar theory, Pulse Modulated radar, requirements, performance of pulsed radar, centimetric radar, transmitter, receiver، CW ground radar, radar altimeter, airborne Doppler principles, and MTI radar.		
Soldering Techniques	**20605121**	**1(0,3)**
General workshop safety, hand tools and measuring devices, wires and cables, PCB repair.		
Project	**20602292**	**3**
An integrated design project to practice the principles of analysis and design acquired throughout the course of the student's study.		
Training	**20602291**	**3 (280 training hours)**
Equivalent to 280 hours of field training targeted to emphasize the ability of students to apply the theories in the world of the profession.		