Curriculum for Associate Degree Program in Electronic Devices Technology Specialization

The curriculum of associate degree in **"Electronic Devices Technology"** 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 curriculum of associate degree in Electronic Devices Technology

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 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: Specialization Requirements (43 credit hours) as follows:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20301113	Electrical Circuits	3	3	0	21302111*
20201114	Electrical Circuits Lab	1	0	3	20301113*
20403111	Electronics	3	3	0	20301113*
20403112	Electronics Lab	1	0	3	20403111*
20404121	Digital Fundamentals	2	2	0	20403111
20404122	Digital Fundamentals Lab	1	0	3	20404121*
20404211	Microprocessors	3	3	0	20404121
20404212	Microprocessors Lab	1	0	3	20404211*
20307221	Programmable Logic Controllers	3	3	0	20404211
20307222	Programmable Logic Controllers Lab.	1	0	3	20307221*
20405111	Principles of Telecommunications	3	3	0	20301113
20405112	Principles of Telecommunications Lab	1	0	3	20405111*
20301131	Engineering Software	1	0	3	21702101
20403121	Electronics Workshops 1	1	0	3	Electronics
20405261	Telecommunications Systems	3	3	0	20405111 or 20405251
20304242	Protection and Control Devices	2	2		
20304242	Protection and Control Devices lab	1	0	3	20304242*
20403221	Electronics Workshops 2	2	0	6	20403121
20403231	Electronics Equipment Technology	3	3	0	20403111
20403232	Electronics Equipment Technology Lab	1	0	3	20403231*
20403291	Training **	3	0	-	-
20403292	Project	3	0	-	-
Total		**43**	**25**	**36**	

*-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
22002101	English language	3	20403111	Electronics	3
20301113	Electrical Circuits	3	20403112	Electronics Lab.	1
20301114	Electrical Circuits Lab.	1	20405111	Principles of Telecommunication	3
21702101	Computer Skills	3	21702111	Communication Skills and Technical Writing	3
21301111	General Mathematics	3	21901100	Islamic Culture	3
20201111	Engineering Workshops	1	22001101	Arabic Language	3
21302111	General Physics	3	20204111	AutoCAD	2
21302112	General Physics Lab.	1			
Total		**18**	**Total**		**18**

Second Year					
First Semester			Second semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
20404211	Microprocessors	3	20307221	PLCs	3
20404212	Microprocessors Lab	1	20307222	PLCs Lab	1
20304242	Protection and Control Devices	2	20403231	Electronics Equipment Technology	3
20304243	Protection and Control Devices lab	1	20403232	Electronics Equipment Technology Lab	1
20403221	Electronics Workshops 2	2	20403291	Training	3
20201121	Engineering Materials	2	20405261	Telecommunication Systems	3
20404121	Digital Fundamentals	2	20403292	Project	3
20404122	Digital Fundamentals Lab.	1	20301131	Engineering Software	1
20506111	Occupational Safety	2			
20403121	Electronics Workshops 1	1			
20405112	Principles of Telecommunication Lab	1			
Total		**18**	**Total**		**18**

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

Brief Course Description

University Requirements

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

تتضمن هذه المادة مجموعة من المهارات اللغوية بمستوياتها وأنظمتها المختلفة: الصوتية، والصرفية، والنحوية، والبلاغية، والمعجمية، والتعبيرية، وتشتمل نماذج من النصوص المشرقة: قرآنية ، وشعرية، وقصصية ، من بينها نماذج من الأدب الأردني؛ يتوخى من قراءتها 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

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 (1-3)**
DC and AC circuits. Resonance. Measuring devices.		
Electronics	**20403111**	3 (3-0)
Semiconductor devices. Diodes: classification, characteristics and applications. Transistors: classification, characteristics and applications. Amplifiers. Oscillators. Logic gates and Integrated circuits: Basic functions, symbols and applications. Introduction to electronic measurements: Oscilloscope applications.		
Electronics Lab.	**20403112**	**3 (0-3)**
Use of oscilloscope in measurements. Investigation of characteristics of semiconductor devices. Construction and study of electronic circuits. Experiments in electronics have to cover the main electronic devices (diode, zener diode, diode applications, BJT, FET, op – amp, oscillator, SCR).		
Digital Fundamentals	**20404121**	**2 (2-0)**
Numerical systems, operations, and codes, logic gates, Boolean algebra and logic simplification, combinational logic and function of combinational logic, flip – flops, counters, shift registers. Fixed – function Integrated Circuits, and Programmable Logic Devices (PLDs).		
Digital Fundamentals Lab.	**20404122**	**1 (0-3)**
Experiments in digital fundamentals have to cover logic gates, combinational logic, flip – flops, counters, shift registers.		
Protection and Control devices	**20304241**	**2 (2-0)**
Basic concepts and definitions. Normal and up-normal operating conditions. Faults and their causes. Protection. Protection devices: classification, applications, basic structure and principle of operation, characteristics. Ratings of protection devices, troubleshooting and calibration. Selection of protection devices.		
Protection and Control devices Lab.	**20304242**	**1 (0-3)**
The course aims at giving the student practical skills in order to select, wire, troubleshoot and maintain the most common control and protection devices like fuses, circuit breakers relays, contactors, timers and switches .		
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.		
Engineering software	**20301131**	**1 (0-3)**
Automated electrical engineering drawing using computer graphic packages. Electrical block and wiring diagrams symbols of basic elements of electrical and electronic circuits, devices and machines. Block diagram of electrical & electronic systems. Schemes reading.		
Electronics Workshops 1	**20403121**	**1 (0-3)**
This course focuses on , Electrical safety at workshops and laboratories ,hand tools measuring devices, electronic components testing ,practicing soldering and disordering and building electronic circuits.		
Telecommunications Systems	**20405261**	**3 (3-0)**
Wireless Communication systems (HF,VHF and UHF) ,Satellite Communication systems , Fiber Optical Communication system ,Public Line Mobile Network (PLMN) ,Cellular Systems (GSM AMPS ,UMTS ,IMT2000).		
Electronic Workshops 2	**20403221**	**2 (0-6)**
Reading block , functional diagrams of electronic equipments and electronic systems ,design , build electrons circuit ,printed circuit technology ,troubleshooting and installation.		
Electronics Equipment Technology	**20403231**	**3 (3-0)**
Block Diagrams &functional Diagrams, circuit diagrams, TV, domestic satellite receiver, mobile telephone and computer, components, operation, troubleshooting and installation.		
Electronics Equipment Technology Lab.	**20403232**	
Troubleshooting, monitoring , finding faults and repairing equipments (TV and ,domestic satellite receiver, mobile telephone and computer).		
Microprocessors	**2040421**	3 (3-0)
Introduction to Microprocessors, types of microprocessors 4, 8,16, 32, 64 Bit microprocessors, microprocessor architecture , 8085 microprocessor architecture, registers and their applications in microprocessors. Memory types and methods of interfacing them with 8085.serial and parallel interfacing using support chips (8255 MUART).the DMA		
Microprocessors Lab.	**20404212**	**1 (0-3)**
In this Lab, students will learn how to use 8085 microprocessor instructions and learn how to write programs contain, move instructions, add and subtraction instructions, rotate ,jump and exchange instructions in addition to logic operations in simple and advanced level programs.		

Programmable Logic Controllers	**20307221**	**3 (3-0)**

Comparison between relays and programmable controllers, basic structure of PLC, cycle-scan. CPU memory, Registers, timers, and counters addresses I/O modules, interfacing programming instructions, Programming devices programming procedures, peripheral equipments, troubleshooting and maintenance

Programmable Logic Controllers Lab.	**20307222**	**1 (1-3)**

Realizing a definite number of cycle for two double acting cylinders, Realizing a di8screate time-driver sequential control system by using limit switches or proximity switches, Realizing a discrete time-driver sequential control system, Investigating TON and TOFF timers with practical application, Investigating TRTG and TMOPN timers with practical application, Investigating UP and Down gunters with practical application, Investigating UP- down and ring counter with practical application, Application of duty – cycle generator to generate train of pulses, Application of function : move , compare rotate and shift registers , and set-reset function

Training	**20403291**	**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	**20403292**	**3**

An integrated assembly/design practical work related to the major fields of study.