



Curriculum for Associate Degree Program in Autotronics Specialization

The curriculum of associate degree in “Autotronics” 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
Autotronics 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 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	

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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	0	21302111*
20301114	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 Laboratory	1	0	3	20404121*
20210111	Automobile Sensing Devices and Instrumentation	3	3	0	20207141
20210112	Automobile Sensing Devices and Instrumentation Laboratory	1	0	3	20210111*
20209111	Thermal Engineering	3	3	0	21302111*
20209112	Thermal Engineering Laboratory	1	0	3	20209111*
20207131	Internal Combustion Engines	3	3	0	20209111
20207132	Internal Combustion Engines Laboratory	1	0	3	20207131*
20207141	Automobile Engineering	3	3	0	-
20207142	Automobile Engineering Workshop	1	0	3	20207141*
20210221	Automobile Electricity and Electronics	3	3	0	20403111 or 20301111
20210222	Automobile Electricity Laboratory	1	0	3	20210221*
20210223	Automobile Electronics Laboratory	1	0	3	20210221*
20207251	Automobile Diagnosis and Maintenance	3	3	0	20207141
20207252	Automobile Diagnosis and Maintenance Laboratory	1	0	3	20207251*
20210231	Automobile Electricity and Electronics Workshop	1	0	3	20210221*
20210291	Training**	3	0		-
20210292	Project	3	0		-
Total		43	25		

*-Co-requisite

** Equivalent to 280 training hours

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Guiding Plan

First Year					
First Semester			Second Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
22001101	Arabic Language	3	20403121	Electronics	3
20301181	Electrical Circuits	3	20403122	Electronics Lab	1
20301182	Electrical Circuits Lab	1	22002101	English Language	3
21702101	Computer Skills	3	21302111	General Physics	3
21301111	General Mathematics	3	21302112	General Physics Lab	1
20204111	AutoCAD	2	20201111	Engineering Workshops	1
21901100	Islamic Culture	3	20404121	Digital Fundamentals	2
			20506111	Occupational Safety	2
			20201121	Engineering Materials	2
Total		18	Total		18

Second Year					
Third Semester			Fourth Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
20207142	Automobile Engineering Workshops	1	20207251	Automobile Diagnosis and Maintenance	3
20207131	Internal Combustion Engines	3	20207252	Automobile Diagnosis and Maintenance Laboratory	1
20207132	Internal Combustion Engines Laboratory	1	20210231	Automobile Electricity and Electronics Workshops	1
20404122	Digital Electronics Lab	1	20210291	Training	3
20207141	Automobile Engineering	3	20210292	Project	3
20210221	Automobile Electricity and Electronics	3	20210111	Automobile Sensing Devices and Instrumentation	3
20210222	Automobile Electricity Laboratory	1	20210112	Automobile Sensing Devices and Instrumentation Laboratory	1
20210223	Automobile Electronics Laboratory	1	21702111	Communication Skills and Technical Writing	3
20209111	Thermal Engineering	3			
20209112	Thermal Engineering Laboratory	1			
Total		18	Total		18

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Brief Course Description

University Requirements

Course Title	Course No	Credit Hours (Theoretical /Practical)
Arabic Language	22001101	3 (3-0)
<p>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 وتدوقها وتحليلها تحليلاً أدبياً؛ تنمية الذوق الجمالي لدى الطلاب الدارسين.</p>		
English Language	22002101	3 (3-0)
<p>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.</p>		
Islamic Culture	21901100	3 (3-0)
<ol style="list-style-type: none"> 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 والأداب الشرعية في إطار الثقافة الإسلامية. 8. النظم الإسلامية. 		
Computer Skills	21702101	3 (1-4)
<p>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.</p>		

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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: Rolle's 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.		

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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.		
Automobile Sensing Devices and Instrumentation	20210111	3 (3-0)
Automobile instrumentation. Automobile sensors and transducers. Data acquisition. Signal conditioning. Interface. Control loops. Examples.		
Automobile Sensing Devices and Instrumentation Lab.	20210112	1 (0-3)
Testing and troubleshooting automobile sensors and transducers. Practical experiments related to automobile instrumentation and control.		

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Thermal Engineering	20209111	3 (3-0)
Concepts and definitions, Properties of a pure substance, Work and heat, the first law of thermodynamics, the second law of thermodynamics, Principles of heat transfer Steady state conduction, Radiation, Heat exchangers		
Thermal Engineering Lab.	20209112	1 (0-3)
Pressure – Temperature relation in the saturation region; Compressor cycles and analyses; Heat pump performance; Conduction heat transfer; Radiation heat transfer; and Heat exchanger performance		
Internal Combustion Engines	20207131	3 (3-0)
Definition and introduction to the (ICE) fundamentals of engine, operation engine types and classification, engine construction, engine measurements and performance, engine system (lubrication, cooling, fuel) Including both carburetor and electronic fuel injection system .		
Internal Combustion Engines Lab.	20207132	1 (0-3)
Performance tests for spark and compression engines, air and fuel consumption, air fuel ratio, brake and indicated horse power. Specific fuel consumption, volumetric efficiency, energy balance, variable compression ratio, engine emission, diagnostic, adjustment of engine.		
Automobile Engineering	20207141	3 (3-0)
Introduction of fundamentals of engine construction and operation, engine systems, automotive transmission (manual and automatic), suspension system, wheel alignment, automotive brake system, steering system, automotive electric and electronic systems.		
Automobile Engineering Workshops	20207142	1 (0-3)
Personal safety, automotive workshop safety area, Universal hand tools and equipments, special tools used in automotive workshop, car's units disassembly / assembly and adjustments.		
Automobile Electricity and Electronics	20210221	3 (3-0)
Introduction, battery, starting system, charging system, ignition system, electronic fuel injection system, lights, safety and signaling, driver information and control devices, wiring harnesses, instrument panel, (CANbus) technology for automotive application.		

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Automobile Electricity Lab.	20210222	1 (0-3)
Battery testing, Starting system, Diagnostics and maintenance, Ignition systems, Diagnostics and maintenance Lights, Safety and Signaling, Automotive, generators automatic control system.		
Automobile Electronics Lab.	20210223	1 (0-3)
Testing and inspection of sensors, actuators, relays. Electronic systems in modern cars: Ignition, fuel, ...		
Automobile Diagnosis and Maintenance	20207251	3 (3-0)
Introduction to automotive diagnostics, maintenance and repair, theoretical background about automotive diagnostics, maintenance and repair, types of automotive diagnostics, maintenance and repair, types of automotive maintenance Inspection and service of car components: engine, engine system, transmission, broke system, suspension system, steering		
Automobile Diagnosis and Maintenance Lab.	20207252	1 (0-3)
Equipments and devices for automotive diagnosis, maintenance repair personal skills in performing inspection and service of cars .Components: engine, transmission, brake system, steering system, suspension system, suspension system and electrical equipments.		
Automobile Electricity and Electronics Workshops	20210231	1 (0-3)
Safety rules and standards in Autotronics workshops. Use of SCAN tools for testing and inspection of modern cars.		
Training	20210291	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	20210292	3
An integrated assembly/design practical work related to the major fields of study.		

