



Curriculum for Associate Degree Program in Engines Systems

The curriculum of associate degree in “Engines systems” 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



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

The curriculum of associate degree in Engines Systems

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

Course No.		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 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*
20304112	Electrical Machines 1	2	2	-	20301113*
20304113	Electrical Machines 2	2	2	-	20304112
20304114	Electrical Machines Laboratory	1	-	3	20304113* or 2030411*
20104181	Statics	2	2	-	21302111
20201231	Theory of Machines	2	2	-	20207121 or 20104181
20201232	Theory of Machines Laboratory	1	-	3	20201231*
20304241	Protection and Control devices	2	2	-	-
20304242	Protection and Control devices Laboratory	1	0	3	20304241*
20401111	Power Electronics	3	3	-	20403111
20401112	Power Electronics Laboratory	1	-	3	20401111*
20309111	Engines 1	3	3	-	
20309211	Engines 2	3	3	-	20309111
20309212	Engines Lab	1	-	3	20309211*
20309221	Power Systems Measurements	3	3	-	20301113
20309222	Power Systems Measurements Lab	1	-	3	20309221*
20301131	Engineering software	1	-	3	21702101
20309291	Training	3	0	-	-
20309292	Project**	3	0	-	-
Total		43	28		

*- Co-requisite

** Equivalent to 280 training hours

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**Study Plan for Associate Degree
in
Engines Systems**

First Year					
First Semester			Second Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
22002101	English Language	3	22001101	Arabic Language	3
21702101	Computer Skills	3	20204111	AutoCAD	2
20309111	Engines 1	3	20506111	Occupational Safety	2
21301111	General Mathematics	3	20201121	Engineering Materials	2
21302111	General Physics	3	20301113	Electrical Circuits	3
		1	20301114	Electrical circuits Lab.	1
21901100	Islamic Culture	3	20403111	Electronics	3
			20403112	Electronics Lab.	1
			20201111	Engineering Workshops	1
Total		17	Total		18

Second Year					
Third Semester			Fourth Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
20401111	Power Electronics	3	20201231	Theory of Machines	2
20309221	Power Systems Measurements	3	20201232	Theory of Machines Lab	1
20309222	Power Systems Measurements Lab	1	20304114	Electrical Machines Lab.	1
20309211	Engines 2	3	20304241	Protection and Control Devices	2
20309212	Engines Lab	1	20304242	Protection and Control Devices Lab.	1
21302112	General Physics Lab.	1	20309291	Training	3
20301131	Engineering software	1	20309292	Project	3
20304112	Electrical Machines 1	2	20304113	Electrical Machines 2	2
21702111	Communication Skills and Technical Writing	3	20104181	Statics	2
			20401112	Power Electronics Lab	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 وتدقيقها 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 والآداب 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.	20301112	1 (0-3)
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	1 (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).		
Power Electronics	20401111	3 (3-0)
Principles and Methods of Electric Power Conversion. Complementary Components and Systems. AC-to-DC Converters. AC-to-AC Converters. DC-to-DC Converters. DC-to-AC Converters. Switching Power Supplies. Power Semiconductor Devices. List of Principal Symbols. Semiconductor Power Switches. Phase-Controlled Converters. . Cycloconverters. Voltage-Fed Converters. Current-Fed Converters. Choppers. Basic calculations. Waveforms. Applications		
Power Electronics Lab.	20401112	1 (0-3)
Test of semiconductor devices. Investigation of characteristics of power electronics devices. Investigation of rectifier, chopper, and inverter circuits under different loads (R, L-loads).		
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.		
Electrical Machines 1	20304112	2 (2-0)
This course covers, constructional features, principles of operation, classification, equivalent circuits, parameters evaluation, characteristics, testing & applications of DC machines & transformers.		

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Electrical Machines 2	20304113	2 (2-0)
This course covers constructional features, principles of operation, classification, equivalent circuits, Parameters evaluation, characteristics, testing & applications of induction & synchronous machines.		
Electrical Machines Lab.	20304114	1 (0-3)
This course focus ,on connection of various types of electrical machines , measurement of losses and efficiency ,speed control and mechanical characteristics of types of motors ,external characteristics of generators.		
Statics	20104181	2 (2-0)
Statics of particles; equilibrium of particles; rigid bodies; equivalent system of forces; centroids and centers of gravity; analysis of structures; frames, machines; moments of inertia.		
Theory of Machines	20201231	2 (2-0)
Introduction, linkages and mechanisms, cams, spur gears, .nonstandard spur gears, bevel, helical and worm gears, gear trains, velocity and acceleration analysis, force analysis of machinery, Blanca of machinery introduction to synthesis, governors, special mechanisms and robotics		
Theory of Machines Lab.	20201231	1 (0-3)
This course give the student an opportunity to apply the theory gained within the theory of machines theoretical course through practical experimentation. Balancing motion transmission through mechanisms .Speed changing.		
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 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		
Engines 1	20309111	3 (3-0)
Definition and introduction ICE fundamental of engine Operation , engine types and classifications, Engine constructions, Engine measurements and Performance Ignition system, Engine system (Lubricating , Cooling , Fuel , including Carburetor and Electronic fuel-injection system).		

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Engines 2	20309211	3 (3-0)
Definition and introduction of many engine types (Gasoline & Diesel Engines).		
Engines Lab.	20309212	1 (0-3)
Mechanical and volumetric efficiency for diesel and petrol, two and four strokes engines. Specific air – fuel consumption, Brake horse power and thermal losses . Heat balance.		
Power Systems Measurements	20309221	3 (3-0)
Instrument transformers (current and voltage transformers) direct and indirect connection of different measuring instrument wattmeter, varmeter, watt-hour meter power factor meter frequency meters and recording instruments.		
Power Systems Measurements Lab.	20309222	1 (0-3)
Experimental application on different types of power systems measuring instruments and recording instruments.		
Training	20309291	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	20309292	3
An integrated assembly/design practical work related to the major fields of study.		

