

Curriculum for Associate Degree Program in General Electromechanical Maintenance Specialization

The curriculum of associate degree in “General Electromechanical Maintenance” 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
General Electromechanical Maintenance 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	21302111*
21702111	Communication Skills and Technical Writing	3	2	2	22002101
20201121	Engineering Materials	2	2	-	-
Total		17	10	18	

* Co-requisite



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

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

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20301111	Electricity and Electronics	2	2	0	21302111*
20301112	Electricity and electronics Laboratory	1	0	3	20301113*
20312211	Electronic Devices	2	1	3	20301111
20304161	Electrical Measurements	2	2	-	
20304162	Electrical Measurements Laboratory	1	-	3	20304161*
20204211	Mechanical Drawing	2	-	6	20204111
20312221	Metal Cutting Technology	3	2	3	
20312231	Electrical Wiring and Illumination	3	1	6	20301111
20312141	Plumbing	3	1	6	
20312251	Metal Welding Technology	3	1	6	
20312222	Forming and Machining Technology	3	1	6	
20312242	Heating Systems	3	1	6	20312141*
20312261	Pneumatic and Hydraulic Systems Components	3	1	6	20312141*
20312171	Carpentry and Decoration	3	1	6	
21602113	Small Enterprises Management	3	3	-	20506111*
20312291	Training**	3	0	-	-
20312292	Project	3	0	-	-
Total		43	17	60	

*-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	20312141	Plumbing	3
21302111	General Physics	3	20312171	Carpentry and Decoration	3
21302112	General Physics Lab	1	22002101	English Language	3
21702101	Computer Skills	3	20312151	Metal Welding Technology	3
21301111	General Mathematics	3	20204111	AutoCAD	2
21901100	Islamic Culture	3	20201111	Engineering Workshops	1
20201121	Engineering Materials	2	20301111	Electricity and Electronics	2
			20301112	Electricity and Electronics Lab	1
Total		18	Total		18

Second Year					
Third Semester			Fourth Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
20204211	Mechanical Drawing	2	21602113	Small Enterprises Management	3
20304161	Electrical Measurements	2	20312222	Forming and Machining Technology	3
20304162	Electrical Measurements Laboratory	1	20312261	Pneumatic and Hydraulic Systems Components	3
20312221	Metal Cutting Technology	3	20312231	Electrical Wiring and Illumination	3
20506111	Occupational Safety	2	20204291	Training	3
20312242	Heating Systems	3	20204292	Project	3
20312211	Electronic Devices	2			
21702111	Communication Skills and Technical Writing	3			
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)

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.

English Language	22002101	3 (3-0)
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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)
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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)
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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

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

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)
The physical concepts to be studied includes: vectors, motion in one dimension, motion in two dimensions, the laws of motion, applications of Newton's laws, circular motion, energy and energy transfer, potential energy, linear momentum, electricity, electrical potential, capacitance, current and resistance .		
General Physics lab	21302112	1 (0-3)
In this course, the student performs thirteen experiments in mechanics and in electricity.		

Specialization Requirements

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

Electricity and Electronics	20301111	2 (2-0)
Concepts and definitions, electrical circuit elements, voltage, current, resistance, capacitance and inductance, ohms law and dc circuit Calculations. Ac Circuits. Three phase circuits, transformers, and electrical machines. Basic electronic devices and circuits. Introduction to electrical protection.		
Electricity and Electronics Lab.	20301112	1 (0-3)
DC and AC circuits. Current and voltage measurements. Simple electronic circuits. DC and AC machines. Single-phase transformers. Protection devices and circuits.		
Electronic Devices	20312211	2 (1-3)
Block diagrams, functional diagrams, and circuit diagrams of TV, Radio and domestic satellite receiver. Basic principles of operation. Troubleshooting, monitoring, finding faults and repairing		
Electrical Measurements	20304161	2 (2-0)
Electrical quantities, classifications of electrical and electronic instruments, DC & AC measuring instruments, bridges, electronic and digital measuring instruments, oscilloscope, recording instruments, power, energy.		
Electrical Measurements Lab.	20304162	1 (0-3)
Experiments have to cover: measurements errors, measurements in DC & AC circuits, load effects, using electronic and digital instruments, calibration and power measurements.		
Metal Cutting Technology	20312221	3 (2-3)
Machinability. Surface Finishing. Cutting Forces. Power construction. Tool life, machine cutting speed, feed rate and depth of cut, cutting-tool material and geometry. Work piece, hardness or strength. Ductility, chemical composition, thermal properties, microstructure, manufacturing process of raw material, mechanics of metal cutting machining. Non traditional machining operation. CNC Machining. Application of different kinds of cutting machines. Safety measures. Using measuring devices.		
Electrical Wiring and Illumination	20312231	3 (1-6)
Introduction to electromagnetic radiation and light, Light quantities. Electrical lamps and their applications. Interior Exterior Lighting, streets lighting, flood lighting, Illumination calculations. Electrical Installations , cables and wires ,Junction Boxes ,Switches and lighting circuits control ,Trunks and conduits outlets ,sockets ,Distribution boards ,Voltage drop calculations ,Protection devices ,Fuses ,Circuit Breakers and Relays. Electric wiring for building ,such as lighting wiring systems ,alarm systems ,motor control systems and inspecting ,maintaining rewinding electrical transformers and machines ,Applying Safety and security means in electrical works ,Electronic circuits building and printed circuits ,Repair and maintenance techniques.		

Plumbing	20312141	3 (1-6)
<p>يشمل هذا المساق مصادر المياه وطرق تزويد المباني بالمياه وطرق التخزين وأنظمة التسخين المركزي وأنظمة التصريف الصحي والقطع الصحية والأدوات والإكسسوارات والمواسير والمخططات الصحية والرموز الصحية ومصطلحاتها التعرف على الأدوات والعدد المستخدمة ، تنفيذ اعمال تمديدات مباني بواسطة المخططات الصحية، تركيب انابيب مياه وصرف صحي .</p>		
Metal Welding Technology	20312251	3 (1-6)
<p>This course introduces the student to the different systems of welding to acquire the necessary skills to be a welding supervisor. It covers theory for gas and arc welding, welding rods, fluxes, equipment and processes used to weld common industrial alloys. It also familiarizes the student with the most important procedures for welding inspection.</p> <p>Application of welding techniques. Including safety, shop practicing for different welding methods, inspections of welding defects.</p>		
Mechanical Drawing	20204211	2 (0-6)
<p>The course is designed to develop the technical sense for the student and enable him to create and analyze the different mechanical parts, pipes and ducts, mechanical and HVAC symbols . Assembly and detailed drawings for technical arrangements. Applications for CAD and Solid Works modeling.</p>		
Forming and Machining Technology	20312222	3 (1-6)
<p>This course Covers the basics of major of forming processes used in manufacturing. Topics include forming metal casting, extrusion, rolling, forging, sheet metal forming and wire and pipe drawing. Safety, measurements and gauges, operating different kinds of machine tools (Drilling, Turning, Milling, Grinding) safely and be able to trouble shoot machining problems as they arise.</p>		
Heating Systems	20312242	3 (1-6)
<p>Introduction to heating systems, Domestic and commercial load calculation, Central heating plants with emphasis on installation procedure, Types of heating systems,. Fuels used for heating systems, Elements of heating systems, Heating systems operation & applications .heating systems by hot air, steam, hot water, under floor Heating system, selection and application of heating equipment, furnaces, boilers, pumps, fans. Appropriate safety rules practices, Tools and Machinery associated with HVACR, Basic principles of installation, maintenance, repair and servicing a wide variety of HVACR systems, Preventive maintenance procedures for heating and cooling equipment and related components, Troubleshooting techniques and equipment repair and rebuilding of HVACR systems.</p>		

Pneumatic and Hydraulic Systems Components	20312261	3 (1-6)
<p>The course covers the specifications and application requirements of different components of the drive systems: execution final elements, control valves, timers, limit switches, reed switches and proximity sensors. The students are introduced to pneumatic and hydraulic system components. Basic pneumatic and hydraulic drives are investigated the major activities related to industrial pneumatic and hydraulic drives, such as actuator positioning, speed control, event driven controls, and realizing different sequential operations</p>		
Carpentry and Decoration	20312171	3 (1-6)
<p>تعريف الطالب بالعدد والآلات اليدوية المستخدمة في أعمال النجارة ، والآلات الكهربائية المحمولة والثابتة ، وكيفية التعامل معها وخدمتها والتعرف ايضا على أنواع الأخشاب والتعامل معها وقراءة رسومات النجارة والديكور وتنفيذها . تعريف الطالب بالعدد والآلات اليدوية والآلات الكهربائية المستخدمة في أعمال النجارة ، وكيفية التعامل معها وخدمتها والتعرف ايضا على أجزائها ونتاج نماذج من الاعمال الخشبية كقطع الاثاث وأعمال المنجور</p>		
Small Enterprises Management	21602113	3 (3-0)
<p>يوضح المساق مفهوم الريادة وخصائصها ، وأهميتها في الاقتصاد الوطني ، والريادة الداخلية والريادة الخارجية، ومفهوم الأعمال الصغيرة والطبيعة القانونية لها، وخطة العمل للبدء بمشروع صغير ريادي، والمفاضلة بين شراء مشروع قائم أو تأسيس مشروع، وموقع المشروع، وتمويل المشروعات الصغيرة وإدارة المشتريات والمخزون في المشروعات الصغيرة، والتسويق، والمحاسبة في الأعمال الصغيرة، والانتماء والتحصيل وعمليات التأمين في المشروعات الصغيرة، مع التركيز على خصوصية التجربة الأردنية في هذا المجال.</p>		
Training	20312291	3 (280 training hours)
<p>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.</p>		
Project	20312292	3
<p>An integrated assembly/design practical work related to the major fields of study.</p>		

