

## Curriculum for Associate Degree Program in Electrical Wiring Specialization

The curriculum of associate degree in “Electrical Wiring” 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
<b>Total</b>		<b>72</b>



### The study plan of a diploma degree in Electrical wiring

**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	
<b>Total</b>		<b>12</b>	<b>10</b>	<b>4</b>	

**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	-	-
<b>Total</b>		<b>17</b>	<b>10</b>	<b>18</b>	



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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*
20301121	Electrical Workshops	2	0	6	20201111
20301141	Electrical Illumination and Installations	3	3	0	-
20301131	Engineering Software	1	0	3	21702101
20304111	Electrical Machines	3	3	0	20301113
20304114	Electrical Machines Lab	1	0	3	20304111* or 20304113*
20301251	Building and low Voltage Wiring	3	3	0	-
20301252	Building and Low Voltage Wiring Lab	1	0	3	20301251*
20304271	Power Systems	3	3	0	20301113
20304272	Power Systems Laboratory	1	0	3	20304271*
20304241	Protection and Control Devices	2	2	0	
20304242	Protection and Control Devices Lab	1	0	3	20304241*
20301261	Industrial Wiring	3	3	0	20304111*
20301262	Industrial Wiring Lab	1	0	3	20301261*
20307213	Applications of PLCs	3	3	0	20403111
20307214	Applications of PLCs Laboratory	1	0	3	20307213*
20301291	Training **	3	0	-	-
20301292	Project	3	0	-	-
<b>Total</b>		<b>43</b>	<b>27</b>	<b>33</b>	

\*- 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
22002101	English Language	3	22001101	Arabic Language	3
21702101	Computer Skills	3	20204111	AutoCAD	2
20301113	Electrical Circuits	3	20506111	Occupational Safety	2
21301111	General Mathematics	3	20201121	Engineering Materials	2
21302111	General Physics	3	20301141	Electrical Illumination and Installations	3
			20301114	Electrical circuits Lab.	1
21901100	Islamic Culture	3	20403111	Electronics	3
			20403112	Electronics Lab.	1
			20201111	Engineering Workshops	1
<b>Total</b>		<b>17</b>	<b>Total</b>		<b>18</b>

Second Year					
Third Semester			Fourth Semester		
Course ID	Course Name	Credit Hours	Course ID	Course Name	Credit Hours
20304241	Protection and Control Devices	2	20307213	Applications of PLCs	3
21702111	Communication Skills and Technical Writing	3	20307214	Applications of PLCs Laboratory	1
20301251	Building and low Voltage Wiring	3	20301121	Electrical Workshops	2
20301252	Building and Low Voltage Wiring Lab	1	20301291	Training	3
20304111	Electrical Machines	3	20301292	Project	3
20304114	Electrical Machines Lab	1	20301261	Industrial Wiring	3
20304271	Power Systems	3	20301262	Industrial Wiring Lab	1
20304272	Power Systems Laboratory	1	20301131	Engineering Software	1
21302112	General Physics Lab.	1	20304242	Protection and Control Devices Lab.	1
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>18</b>

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## Brief Course Description Specializations

## University Requirements

Course Title	Course No	Credit Hours ( Theoretical /Practical)
<b>Arabic Language</b>	<b>22001101</b>	<b>3 (3-0)</b>
<p>تتضمن هذه المادة مجموعة من المهارات اللغوية بمستوياتها وأنظمتها المختلفة: الصوتية، والصرفية، والنحوية، والبلاغية، والمعجمية، والتعبيرية، وتشتمل نماذج من النصوص المشركة: قرآنية، وشعرية، وقصصية، من بينها نماذج من الأدب الأردني؛ يتوخى من قراءتها وتدقيقها وتحليلها تحليلاً أدبياً؛ تنمية الذوق الجمالي لدى الطلاب الدارسين.</p>		
<b>English Language</b>	<b>22002101</b>	<b>3 (3-0)</b>
<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>		
<b>Islamic Culture</b>	<b>21901100</b>	<b>3 (3-0)</b>
<ol style="list-style-type: none"> <li>1. تعريف الثقافة الإسلامية وبيان معانيها وموضوعاتها والنظم المتعلقة بها – وظائفها وأهدافها.</li> <li>2. مصادر ومقومات الثقافة الإسلامية والأركان والأسس التي تقوم عليها.</li> <li>3. خصائص الثقافة الإسلامية.</li> <li>4. الإسلام والعلم، والعلاقة بين العلم والإيمان</li> <li>5. التحديات التي تواجه الثقافة الإسلامية.</li> <li>6. رد الشبهات التي تثار حول الإسلام.</li> <li>7. الأخلاق الإسلامية والآداب الشرعية في إطار الثقافة الإسلامية.</li> <li>8. النظم الإسلامية.</li> </ol>		
<b>Computer Skills</b>	<b>21702101</b>	<b>3 (1-4)</b>
<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**

<b>Engineering Workshops</b>	<b>20201111</b>	<b>1 (0-3)</b>
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.		
<b>AutoCAD</b>	<b>20204111</b>	<b>2 (0-6)</b>
Introduction to AutoCAD, application of AutoCAD, commands, geometric entities. Geometric construction. Dimensioning, free –hand sketching, object representation, orthographic drawing and projections.		
<b>Occupational safety</b>	<b>20506111</b>	<b>2 (2-0)</b>
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.		
<b>Communication Skills and Technical Writing</b>	<b>21702111</b>	<b>3 (2-2)</b>
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.		
<b>Engineering Materials</b>	<b>20201121</b>	<b>2 (2-0)</b>
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.		
<b>General Mathematics</b>	<b>21301111</b>	<b>3 (2-2)</b>
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)		
<b>General Physics</b>	<b>21302111</b>	<b>3 (2-2)</b>
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.		
<b>General Physics lab</b>	<b>21302112</b>	<b>1 (0-3)</b>
In this course, the student performs thirteen experiments in mechanics and in electricity.		

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**Specialization Requirements**

<b>Electrical Circuits</b>	<b>20301113</b>	<b>3 (3-0)</b>
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.		
<b>Electrical Circuits Lab.</b>	<b>20301112</b>	<b>1 (0-3)</b>
DC and AC circuits. Resonance. Measuring devices.		
<b>Electronics</b>	<b>20403111</b>	<b>3 (3-0)</b>
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.		
<b>Electronics Lab.</b>	<b>20403112</b>	<b>1 (0-3)</b>
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).		
<b>Electrical Illumination and Installations</b>	<b>20301141</b>	<b>3 (3-0)</b>
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		
<b>Building and Low-voltage Wiring</b>	<b>20301251</b>	<b>3 (3-0)</b>
Wiring for lighting and power systems in buildings and their calculations, emergency and standby power systems, fire alarm systems and burglar alarm systems in buildings, methods of wiring, testing and measuring wiring parameters, choosing components.		
<b>Building and Low-voltage Wiring Lab.</b>	<b>20301252</b>	<b>1 (0-3)</b>
Controlling electrical pulps lighting, Wiring electrical bells. Wiring interphone. Wiring street lightings. Security doors wiring opening and closing control methods. Traffic lights systems. Earthing.		

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<b>Electrical workshops</b>	<b>20301121</b>	<b>2 (0-6)</b>
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.		
<b>Electrical Machines</b>	<b>20304111</b>	<b>3 (3-0)</b>
This course throws light on all types of electrical machines ,transformers ,motors , ,generators special machines ,These machines which may face a diploma holder in his practical life ,He must be aware of many related things about these machines ,construction ,principles of operation , characteristics , applications , maintenance .		
<b>Electrical Machines Lab.</b>	<b>20304114</b>	<b>1 (0-3)</b>
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.		
<b>Engineering Software</b>	<b>20301131</b>	<b>1 (0-3)</b>
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.		
<b>Power Systems</b>	<b>20304271</b>	<b>3 (3-0)</b>
Power generation plants, transformation stations, high voltage network, electrical distribution systems and their faults.		
<b>Power Systems Lab.</b>	<b>20304272</b>	<b>1 (0-3)</b>
Visits to power generation plants and power distribution stations. Technical reports. Experimental and demonstration depending on the available facilities.		
<b>Protection and Control devices</b>	<b>20304241</b>	<b>2 (2-0)</b>
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.		

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<b>Protection and Control devices Lab.</b>	<b>20304242</b>	<b>1 (0-3)</b>
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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

<b>Industrial Wiring</b>	<b>20301261</b>	<b>3 (3-0)</b>
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Electrical drawing in factories , Symbols , Feeding systems , Electrical wiring methods , Main and subsidiary panel boards, Distribution boards , Cross section and drop voltage calculations , Electrical motors and their control devices , Starters , Starting methods protections , Power systems and wiring systems protection (Selective protection ) , Air conditioning and ventilation devices and their connections.

<b>Industrial Wiring Lab.</b>	<b>20301262</b>	<b>1 (0-3)</b>
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Motor wiring circuit, DC and AC motors, Starting and controllers, Industrial loads, Selection of components and cables.

<b>Applications of PLCs</b>	<b>20307213</b>	<b>3 (3-0)</b>
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Numbering systems. Logic circuits. Conversion of control actions and algorithms into Boolean equations and logic circuits. Introduction to PLCs and their applications. Examples of control circuits. PLCs programming. Main functions. Timers, counters. Use of PLCs in control.

<b>Applications of PLCs Lab.</b>	<b>20307214</b>	<b>1 (0-3)</b>
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Basic components and structure of PLC. Programming. Conversion of conventional control circuits into logic circuits. Motor control using PLCs.

<b>Training</b>	<b>20301291</b>	<b>3 (280 training hours)</b>
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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.

<b>Project</b>	<b>20301292</b>	<b>3</b>
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An integrated assembly/design practical work related to the major fields of study.