



# Associate Degree Program

<b>Specialization</b>	Common
<b>Course Number</b>	020300115
<b>Course Title</b>	Electrical workshops
<b>Credit Hours</b>	1
<b>Theoretical Hours</b>	0
<b>Practical Hours</b>	3

### **Brief Course Description:**

- ❖ Electric wiring for building, such as lighting wiring systems ,alarm systems ,motor control systems ,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.

### **Course Objectives:**

Upon the completion of the course, the student will be able to:

1. To construct Electrical wiring for buildings.
2. To construct Electrical wiring for alarm systems.
3. To construct Electrical wiring for single and three phase motors and control circuits.
4. To construct Electrical wiring for transformers.
5. To construct Electrical wiring for DC motors.
6. Preparing and designing electronic circuits.

**Detailed Course Description:**

Unit Number	Unit Name	Unit Content	Time Needed
1.	<b>Introduction</b>	<ul style="list-style-type: none"> <li>▪ Tools ,apparatus and equipment presentation</li> <li>▪ Workshop safety instructions</li> <li>▪ Types and classification of cables and wires, wires connecting</li> </ul>	
2.	<b>Electrical wiring fixtures and accessories</b>	<ul style="list-style-type: none"> <li>▪ Switches , outlets, junction boxes, lamp accessories and their fixing methods</li> <li>▪ Underground low voltage raceway cable techniques and practices</li> </ul>	
3.	<b>Electrical wiring circuits</b>	<ul style="list-style-type: none"> <li>▪ Wiring practices of lighting circuits (single-pole switch, double-way switch, staircase switches florescent lamp assembling)</li> <li>▪ Single-phase and three-phase outlets wiring and practices, with and without earthing</li> <li>▪ Telephone, intercom, interphone wiring practices, bell and call system wiring</li> </ul>	
4.	<b>Conduits and trunks for electrical wiring</b>	<ul style="list-style-type: none"> <li>▪ Conduits classification, conduit bending methods and practices</li> <li>▪ Trunks and conduits fixing and wiring practices</li> </ul>	
5.	<b>Transformers</b>	<ul style="list-style-type: none"> <li>▪ Single-phase and three-phase transformers (cored and unvaried), autotransformers and voltage regulators</li> <li>▪ Current and voltage transformer</li> </ul>	

		techniques and maintenance	
6.	<b>Single-phase motors</b>	<ul style="list-style-type: none"><li>▪ Rewinding transformers.</li><li>▪ Shaded pole, split, wounded and capacitor motors, universal motor</li><li>▪ Motors inspections, repairing and rewinding techniques.</li></ul>	
7.	<b>Three-phase motors.</b>	<ul style="list-style-type: none"><li>▪ Motor construction presentation for wounded motor, squirrel-cage motor and synchronous</li><li>▪ Three-phase motor inspection, maintaining and rewinding techniques</li></ul>	
8.	<b>DC motors</b>	<ul style="list-style-type: none"><li>▪ Construction presentation of DC machines (series, shunt and compound machines)</li><li>▪ Armature coil rewinding for ring type and waving type windings</li></ul>	

**Textbook & References :**

1. Wiring simplified. Based on the 2005 National code. By H.P. Richter 2005.
2. Practical electrical wiring : Residential , Farm , commercial and industrial ,By H. P. Richter and W. Creighton Schwan ,1996.
3. Manuals existing at the laboratory and the laboratory sheets prepared by the instructors