

Program Engineering

Specialty	Electrical Installations and Equipment
Course Number	020303141
Course Title	Domestic electrical wiring
Credit Hours	3
Theoretical Hours	3
Practical Hours	0

Brief Course Description:

- ❖ 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. 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.

Course Objectives:

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

1. To know and understand the AC low voltage systems for building wiring according to NEC and Jordanian code.
2. To calculate and design power and lighting systems in domestic and commercial buildings.
3. To know understand and design fire alarm systems.
4. To know, understand and design burglar alarm systems.
5. To know the important subsidiary low voltage systems in new buildings
6. (audio system, call systems, communication systems, low voltage remote switches and so on)
7. To design understand emergency and standby power circuits.
8. To know and understand local and international electrical codes and symbols.
9. To know the indoor electrical wiring materials, their requirements and ratings.
10. To know methods and techniques of measuring, inspection and tests for indoor wiring systems.

Detailed Course Description:

Unit No.		Unit Content	Time Needed
1.	Wiring Materials	<ul style="list-style-type: none"> Types of conduits, types of wires, types of wire isolations and their applications, ratings and requirements of fixtures, switches cables, methods of wiring, batteries 	
2.	Low voltage distribution systems (electrical supplying in buildings)	<ul style="list-style-type: none"> Configuration and voltage systems according to NBA and Jordan standards, balance and unbalance loaded cases of the following distribution systems: single-phase two wire system, single-phase three wire system, two-phase two wire system, two-phase five wire system, three-phase three wire system, three-phase four wire system 	
3.	Electrical Wiring Circuits	<ul style="list-style-type: none"> Radial and mish circuits, lighting circuits, power circuits in buildings, calculations of lighting and power circuits wiring, cable cross section calculations, drop voltage calculations, power factor calculation. 	
4.	Distribution panel boards (D.P.B)	<ul style="list-style-type: none"> Main and secondary panel boards, construction and wiring of single-phase and three-phase boards, panel board requirements, calculations and design of branch circuits 	
5.	Home Security Systems (H.S.S.)	<ul style="list-style-type: none"> Importance of security systems, types of burglar alarm systems, series type circuits, parallel type circuits, ribbon sensors, mechanical switches , magnetic switches and their applications in H.S.S, automatic sensors: light sensors, infrared sensors , ultrasonic sensors, motion sensors , radar 	

		type sensors and their applications.	
6.	Fire Alarm Systems (F.A.S.)	<ul style="list-style-type: none"> ▪ Importance of F.A.S. , construction and main components, brake glass switches, types of smoke and fire detectors and their applications, simple and complex F.A.S., series and shunt type fire circuits batteries , bells, cables , F.A.S. wiring. 	
7.	Mesallenious lighting installations in buildings	<ul style="list-style-type: none"> ▪ Installation of : living room, dining room, family room, bedroom, kitchen, garage and baths. ▪ Installation of hotels, schools, offices 	
8.	Installation of subsidiary systems	<ul style="list-style-type: none"> ▪ Wiring of telephone circuits, intercom, bells ▪ Wiring of nursing call systems ▪ Wiring of remote lighting systems ▪ Wiring of clock system and time recorders ▪ Wiring of sound systems and speakers. ▪ Wiring of monitoring systems 	
9.	Emergency and standby systems	<ul style="list-style-type: none"> ▪ Emergency system, emergency loads , standby systems and loads, requirements of emergency and standby systems , power supplies and their circuits, emergency lighting. ▪ 	
10.	Electrical safety and earthing	<ul style="list-style-type: none"> ▪ Grounding, grounding promotes safety, grounding of fault circuits interrupters and their wiring, neutral wire grounding, earth resistance measurement, measurement of earth electrode of the consumer. 	
11.	Inspection and testing of electrical wiring	<ul style="list-style-type: none"> ▪ Testing apparatus, types of tests, polarity testing, earthling testing, conductors continuity testing, earth loop impedance test, line earth loop test, neutral earth loop test isolation test, earth- leakage circuit breakers, fault determination and maintenance. 	

Exams		Percentage	Date
Exams	Midterm Exam	40%	
	Final Exam	50%	
Homework and Projects		10%	

Teaching Methodology:

- ❖ Lecture

Text Books & References:

- 1) A text book of “Electrical Wiring”.
- 2) Electrical Wiring Residential.
- 3) Basic Electrical Installation work 2005 by Trevor Linsley.