

## Faculty of Engineering & Technology

### Utilization of Electrical Energy

**Information :**

**Course Code :** EPR 513

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Specialization of Electrical Power Engineering

**Instructor Information :**

Title	Name	Office hours
Lecturer	Abdelmonem Elsayw Abdelmonem Elsayw Khalil	2
Teaching Assistant	Mariam Mohamed Ali Ahmed Elshimey	

**Area Of Study :**

Knowledge about different applications of electrical energy utilization including illumination schemes, electric traction, electric heating, electric welding.

Skills for lighting schemes design.

Ability to design lighting schemes for different applications.

**Description :**

Electrical traction systems, Mechanical and electrical characteristics, Speed curves, Operations during electrical traction, Electrical traction motors, Modern control of traction motors. Illumination: Artificial illumination requirements and characteristics, Standard specifications, Types of lamps and luminaries, Illumination curves, Installation of lamps, Luminaries and connections, gas filled lamp ignition. Electric heating: Resistance wires, Electric furnaces, Dielectric heating. Electric welding of metals: Welding transformers and generators, Arc welding, Spot welding. Electrolytic processes: Metal coating. Electric transportation: Cranes and hoists, Elevators and conveyor belts.

**Course outcomes :**

**a. Knowledge and Understanding: :**

1 -	Outline concepts and applications of electrical energy utilization.
2 -	Describe the characteristics of artificial illumination.
3 -	Explain different types of traction systems and their applications.
4 -	Describe methods of electric heating and their applications.
5 -	Demonstrate methods of electric welding and their applications.

**b. Intellectual Skills: :**

1 -	Design lighting schemes for several applications.
2 -	Analyze the performance of different traction systems.
3 -	Examine the effect of the different heat transfer modes in different mediums.

**c. Professional and Practical Skills: :**

1 -	Evaluate the performance of different electrical lighting systems with respect to Egyptian code.
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2 -	Apply DIALux for the design of lighting schemes
3 -	Write technical reports in accordance with standard scientific guidelines.
<b>d.General and Transferable Skills: :</b>	
1 -	Communicate effectively.

<b>Course Topic And Contents :</b>			
<b>Topic</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Tutorial / Practical</b>
Illumination: Artificial illumination requirements and characteristics	10	6	4
Types of lamps and luminaries	10	6	4
Design of lighting schemes - DIALux	15	9	6
Electrical traction systems	15	9	6
Applications for different traction systems	5	3	2
Electrical heating: Resistance wires	5	3	2
Electric furnaces, dielectric heating			
Electrical welding of metals			
Arc welding			

<b>Teaching And Learning Methodologies :</b>
Interactive Lecture
Discussion
Problem-based Learning
Report

<b>Course Assessment :</b>			
<b>Methods of assessment</b>	<b>Relative weight %</b>	<b>Week No</b>	<b>Assess What</b>
Computer Assignment	10.00		
Final Exam	40.00		
Mid- Exam 1I	15.00		
Mid- Exam I	15.00		to assess the performance of students during the course
Participation	10.00		
Quizzes	10.00		