

# 802443-3

## Utilization Of Electrical Energy

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Students will be introduced to the main working principles of various utilization of Electric energy. This course provides students with the knowledge of different fields of electrical energy utilization such as electrical traction, illumination, electric heating, electric welding, electrolytic processes, and electric transportation.

# Student Outcomes

-Students of an engineering program-

- a. An ability to apply knowledge of mathematics, science, and engineering.
- b. An ability to design and conduct experiments, and to critically analyze and interpret data.
- c. An ability to design a system, component or process to meet desired needs.
- d. An ability to function in multi-disciplinary teams.
- e. An ability to identify, formulate and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability for effective oral and written communication.
- h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for Engineering practice.

Technical knowledge and competencies

Generic skill

# Assessment Grading

- Homework & presentation 10%
- Quizzes 5%
- Exam 25%
- Final exam 60%
- Total 100%

# Exams

# Contents

- **Electrical traction systems** **3 Weeks**
- **Illumination** **3 Weeks**
- **Electric heating** **2 Weeks**
- **Electric welding of metals** **2 Weeks**
- **Electrolytic processes** **2 Weeks**
- **Electric transportation** **2 Weeks**

**Class meets for 3 hours (2Hr & 1Hr) per week**

# References:

## Textbook:

- [1] Henry C. Horstmann, Victor H. Tousley, Modern Illumination, Theory And Practice: A Handbook Of Practical Information For The Users Of Electric Light, Architects, Contractors And Electricians, (Kessinger Publishing, LLC, USA 2007).

## References:

- [1] Gupta, J. B., Utilization of Electric power and electric traction,
- [2] Bimal K. Bose, Power Electronics and Motor Drives: Advances and Trends,( 1<sup>st</sup> Ed., Academic Press, 2006).
- [3] Paul C. Krause, Oleg Wasynczuk, Scott D. Sudhoff, Analysis of Electric Machinery and Drive Systems, 2<sup>nd</sup> Edition, (Wiley-IEEE Press, 2002).

*Good luck*

