

SREE 3002

ENERGY DISTRIBUTION AND EFFICIENT UTILIZATION

**CARL KROPP ©
2019**

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OFFICE HOURS: Before or after class,
OR by appointment

MARKING SCHEME: Essay 10%
Labs.....10%
Tests.....10%
Final Exam* 70%
Total 100%

* For evaluation purposes only and will not be returned to the student.

Student must obtain a copy of SREE 3002 Course Pack (2019).

COURSE DESCRIPTION:

Electricity: Use, Distribution, Integration of Distributed Generation

Electricity use in Ontario: rates, government incentives, smart use. Electricity Distribution: topology, reliability, load characteristics, voltage regulation, power loss, capacitors, economics of optimum choice, system protection. Distributed Generation: guides and regulations, case study.

Lectures three hours per week, laboratories three hours per week, alternate weeks.

LEARNING OBJECTIVES:

At the end of the course the student should be able to:

- Comment in an informed way, on electrical energy use in Canada,
- Understand electricity rates and rate structure,
- Participate in the design of efficient electrical energy utilization initiatives,
- Participate in the design and operation of the electricity distribution system,
- Understand the problems and solutions associated with the integration of distributed generation into the electricity distribution system.

COURSE CONTENT:

1. Electrical Energy Use in Ontario
2. Electricity Supply in Ontario – The Players
3. Rates
4. Conservation and Demand Management Programs (CDM)
5. Elements of Distribution System Engineering
6. Economics and Optimum Choice
7. Distribution System Protection
8. Distributed Generation (Embedded Generation)

REFERENCES:

- Electrical Power Distribution System Engineering, Turan Gonen, Second Edition, CRC Press
- Power Distribution Engineering Fundamentals and Applications, James J. Burke, CRC Press
- Electrical Power Distribution Handbook, T.A. Short, CRC press
- Integration of Distributed Generation in the Power System, Bollen and Hassan, Wiley
- Canadian Electricity Association, #128 D 767, "Connecting Small Generators to Utility Distribution Systems
- Electrical Distribution System Protection, Third Edition, Cooper Power Systems
- Design of Smart Power Grid Renewable Energy Systems, Keyhani, Wiley
- Guide to Energy Management; Capehart, Turner, Kennedy, CRC Press
- Handbook of Energy Engineering; Mehta, CRC Press
- Sustainable Energy Systems Engineering; Gevorkian, McGraw Hill
- G. M. Masters, Renewable and Efficient Electric Power Systems, Second Edition, John Wiley & Sons, Inc., Hoboken, New Jersey, 2012.

1. Electrical Energy Use in Ontario.

Assignment

You are required to write an essay titled:

The Future for Electricity in Ontario

- Ontario Green Energy Act 2009
Enacted by the Liberal government in 2009.
What was the purpose of this Act?
What were the implications for electricity in Ontario?
- This act was cancelled by the Conservative government in 2018.
Why?
Were the objectives of the Act not reasonable?
Is there a replacement strategy for the 2009 Act?
What do the “experts”/media have to say?
- How may the above two actions impact the production, cost, and use of electricity in Ontario? This will be the conclusion of your essay. The conclusion is to be supported by your research and good reasoning.

So, in your essay you need to take a position concerning the future and support it with the findings of your research.

The essay is to be 1200 +/- words, typed, 12point, doubly spaced and references cited.

(3 mark penalty per reference omission up to a maximum of 9 marks out of 100).

Be sure to indicate your name and student number on the cover page.

This essay will count for up to 10 marks of the final mark for the course.

Marking Scheme:

- Structure, style, format, efficient use of language
(easy reading, reader friendly).....10%
- Research findings.....40%
- Your conclusion (supported by sound reasoning).....50%

Total 100%