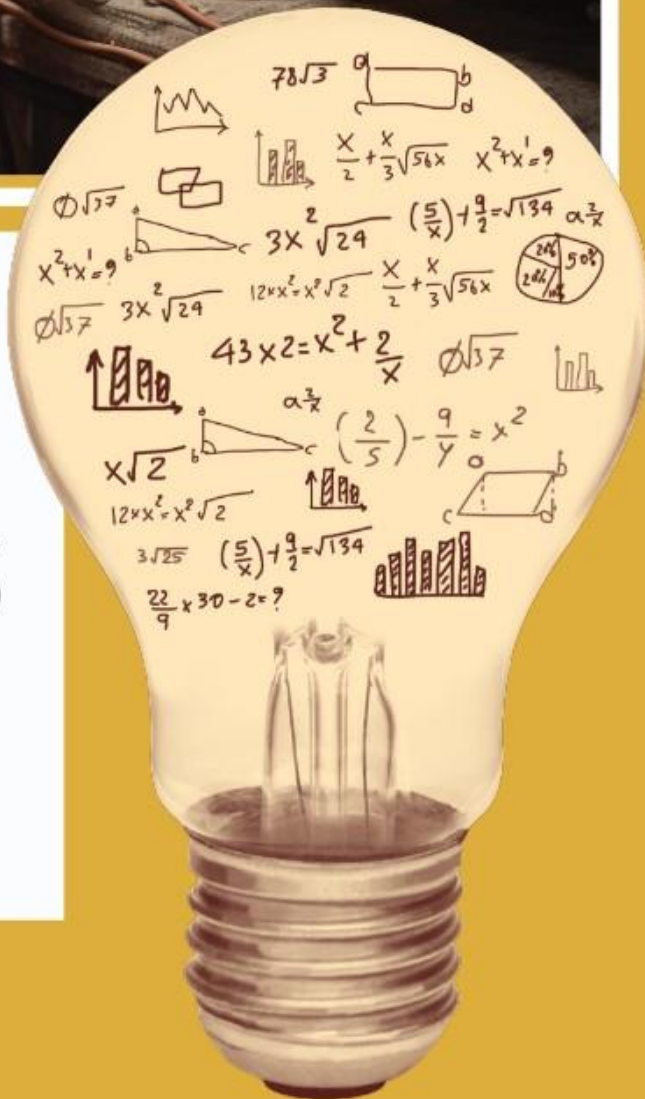


# BASIC ELECTRICITY + MATHEMATICS FOR UTILITY OPERATIONS



MARCH 19, 2024

Prerequisite for Meter I and Substation I

# BASIC ELECTRICITY + MATHEMATICS FOR UTILITY OPERATIONS

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NEPPA is offering a 1-day basic and technical prerequisite course for anyone looking to attend technical programs or to gain a basic understanding of electrical theory, concepts and mathematic principles.

Basic Electricity & Mathematics for Utility Operations is designed to be an introduction to the electrical concepts and mathematic principles needed to understand electricity and electrical equipment. This course is a foundational level course that is a basis for additional course work in specific disciplines such as substation, overhead lines and metering.

## WHO SHOULD ATTEND

This course is designed for:

- All field operations personnel including:
  - Meter Technicians
  - Lineworkers
  - Substation Technicians
- Customer Service or Office Personnel looking to understand the product they sell every day.
- Supervisors or Managers transitioning from other departments or disciplines.

## LEARNING OBJECTIVES

Upon completion of this one-day course, participants will be able to successfully:

1. Practice and solve mathematical problems used in electrical power measurements.
2. Demonstrate a basic understanding of electrical theory including electricity and magnetism.
3. Ability to differentiate between DC and AC circuit function.
4. Explain the difference and interconnection of generation, transmission and distribution of electricity.
5. Demonstrate an understanding of energy and demand, and the difference between kW and kWh.
6. Ability to recognize the utmost importance of electrical safety.





## TOPICS COVERED

### Basic Electricity:

- Atoms
- Conductors & Insulators
- Ohms law
- Voltage, Current, Resistance
- Magnetism
- Generation
- AC sine waves
- Inductance, Capacitance
- Transformers
- Series & Parallel circuits

### Basic Mathematics:

- Whole numbers
- Fractions decimals
- Powers and roots
- Algebra, Trigonometry
- Vectors

### Electric Power & Energy:

- Resistance, current and energy
- Energy calculations
- Electric Power
- The power chart (triangle)
- Demand calculations
- Demand billing

### Electrical Safety:

- Physical & Electrical Hazards
- Working with energized parts
- PPE
- Safe Work Practices
- Effect of current and voltage on the human body
- Electric Arcs

### Power System Overview:

- Generation
- Transmission
- Distribution

## AGENDA

*Agenda details are subject to change.*

8:00 am	Welcome & Introductions	12:45pm	Module 5: Power System Overview
8:15 am	Module 1: Basic Electricity		
9:15 am	Break	1:45 pm	Final Exam & Practical
9:30 am	Module 2: Basic Mathematics	2:30 pm	Review Final
10:45 am	Module 3: Electrical Safety	2:45 pm	Certificates of Completion
11:30 am	Lunch	3:00 pm	Adjourn
12:00 pm	Module 4: Electric Power & Energy		

## INSTRUCTOR

**Anthony Calascibetta, CUSP**

*Director of Safety & Training*

Anthony is NEPPA's Director of Safety & Training. He has 40 years of Electrical experience and 25 years of Electric Utility experience. Starting out as a Lineworker, he moved to the Substation Division as a Lead Substation Technician.



He is proficient in relay testing, transformer testing, circuit breaker testing, and all aspects of wiring in overhead, underground, metering, and substations.

Anthony is an OSHA Authorized General Industry Trainer, and OSHA Authorized Construction Trainer.