

Passaic County Technical Institute

**Electrical Technology 1
36 Days**

March 6, 2008

Electrical Technology Level 1

36 Days

I. Description

Electrical Technology Level I is a 36 day course, which trains the students in the fundamentals of the Electrical Traded.

During the course, the students are introduced to, Safety operations and procedures, basic electrical theory, hand tools, raceways and conductors, devices and fixtures, enclosures, wiring methods, the National Electrical code, and hands on practical projects

The course is designed to give the students a broad overview of the electrical trade with hands on and basic theory assignments, Aligned with the core Curriculum Standards

II. Objectives

1- Safety

Students will be able to match terms related to safety.

Will be able to state shop safety rules.

Will be able to relate safety rules to hand tool use.

Will be able to state electrical shock path theory.

Will be able to state major causes of electrical hazards.

Will be able to pass safety test.

2- Hand tools

Students will be able to identify basic hand tools used in the electrical trade.

Students will be able to match terms related to basic hand tools.

Students will be able to demonstrate proper use of hand tools.

3- Electricity

Students will be able to match terms related to basic electricity.

Students will be able to explain the basic principles of electricity.
Students will be able to related OHM'S law to circuits.
Students will be able to identify series and parallel circuits.
Students will be able to use meters to measure electricity.

4- National Electrical Code

Students will be able to match terms related to the NEC.
Students will be able to Identify parts of the NEC.
Students will be able to state the purpose of the NEC.

5- Conductors for General Wiring

Students will be able to identify types of conductors used in the Electrical Trade.
Students will be able to match terms related to conductors.
Students will be able to related conductors to the American Wire Gauge.
Students will be able to practice proper conductor applications.

6- Raceways

Students will be able to identify electrical raceways.
Students will be able to discuss raceway fill theory.
Students will be able to practice proper raceway applications.
Students will be able to match terms related to raceways.

7- Switches and Receptacles

Students will be able to identify proper switches and receptacles used in the electrical trade.
students will be able to rate switches and receptacle to their ratings.
Students will be able to practice proper installation for switches and receptacles.
Students will be able to match terms related to switches and receptacles.

8- Wiring Methods

Students will be able to identify enclosures used in the electrical trade.
Students will be able to identify fittings used in the electrical trade.
Students will be able to match terms related to wiring methods.

Students will be able to practice proper wiring methods.
Students will be able to practice proper light fixture installation.
Students will be able to practice proper splicing.

9- Career Opportunities

Students will be able to identify all classifications of the electrical trade.
Students will be able to understand apprenticeship programs of the electrical trade.
Students will be able to understand the responsibilities of a journeyman electrician.
Students will be able to understand the benefits offered in the electrical trade.
Students will be able to understand the electrical licensing laws of New Jersey.
Students will be able to related their future to the electrical trades.

III. Text books and Instructional Materials.

Electricity 1 Text
Thomas s. Kubala
7th Edition
Delmar Publishers,2005

Electrical Raceways and Other Wiring Methods
Richard E. Loyd
5rd Edition
Delmar Publishers, 2005

National Electrical Code
National Fire and Protection Association Inc., 2005

I V. Teaching Strategies

Various teaching methods are utilized in this course. Meaningful instruction will be given using workbooks, textbooks, handouts, and hands on practical projects. Teacher modeling of lecture on both practical and

written work will be implemented and evaluated. The use of specific audiovisual materials will supplement classroom instruction.

VI. Evaluation and Proficiencies

A. Evaluation

Students will be evaluated using the following criteria:

Class participation

Attendance

Tests

Quizzes

Practical projects

Note books

B. Proficiencies

Upon successful completion of the requirements of this course, the students will be able to:

Understand safety procedures for electrical field.

Understand basic functions of hand tools

Understand the basic functions of electricity.

Understand purpose of the National Electrical Code

Identify proper uses of Electrical Conductors for general wiring.

Identify raceways used in the Electrical Trade.

Understand the proper installation of Switches and Receptacles.

Identify proper wiring methods of the electrical trade

Understand career opportunities of the Electrical Trade

Monitor and evaluate their own thinking). (ccwr 3.10)

Establishing OSHA and customer safety requirements. (nssb)

Recognize and define a problem, or clarify decisions to be made (ccwr 3.1)

Communicate mathematically through written, oral, symbolic, and visual forms of expressions, (m4.2)

Planning and installing raceway projects (nssb VI)

Use a variety of estimation strategies and recognize situations in which estimation is appropriate. (m4.2)

Read a variety of materials and texts with a comprehension and critical analysis. (1a13.4)

Learn to identify systems of interacting components and understand how their interactions combine to produce the overall behavior of the system. (s5.1)

Understand and use nontextual visual information. (1a13.5)

Installing receptacles, lighting systems and fixtures. (nssbIX)

Planning and installing raceway projects (nssb VI)

Planning and installing raceway projects (nssb VI)

Understand , select and apply various methods of performing numerical operations. (m4.8)

Key I = Introduced
 D = Developed in Depth
 R = Reinforced

Electrical Technology I – 45 Days

SCOPE AND SEQUENCE CHART

Suggested Grade Levels

SKILL TO BE LEARNED	9	10	11	12
Understand safety procedures for electrical field	I			
Understand basic functions of hand tools	I			
Understand the basic functions of electricity	I			
Understand purpose of the NED	I			
Identify proper uses of Electrical Conductors for general wiring	D			
Identify raceways used in the electrical trade	I			
Understand the proper installation of switches and receptacles	I			
Identify proper wiring methods of the electrical trade	I			
Understand career opportunities of the electrical trade	I			

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STUDENT HANDOUT

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Electrical Technology Level I is a 36 day course, which trains the students in the fundamentals of the Electrical Traded.

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Proficiencies

Upon successful completion of the requirements of this course, the students will be able to:

- Understand safety procedures for electrical field.
- Understand basic functions of hand tools
- Understand the basic functions of electricity.
- Understand purpose of the National Electrical Code
- Identify proper uses of Electrical Conductors for general wiring.
- Identify raceways used in the Electrical Trade.
- Understand the proper installation of Switches and Receptacles.
- Identify proper wiring methods of the electrical trade
- Understand career opportunities of the Electrical Trade
- Monitor and evaluate their own thinking.
- Establishing OSHA and customer safety requirements.
- Recognize and define a problem, or clarify decisions to be made
- Communicate mathematically through written, oral, symbolic, and visual forms of expressions.
- Planning and installing raceway projects.
- Use a variety of estimation strategies and recognize situations in which estimation is appropriate.
- Read a variety of materials and texts with a comprehension and critical analysis.

Learn to identify systems of interacting components and understand how their interactions combine to produce the overall behavior of the system.

Understand and use nontextual visual information.

Installing receptacles, lighting systems and fixtures.

Planning and installing raceway projects.

Planning and installing raceway projects

Understand, select and apply various methods of performing numerical operations.