

# ELECTRIC POWER DISTRIBUTION (413)

Information provided includes course descriptions by subject only. For complete 2024-2025 programs/academic plans, please refer to Academic Programs (<http://catalog.blackhawk.edu/academics/>).

## **413-303 Industrial Electricity for Line Technicians**

**Credits:** 2

Through this course, students gain basic knowledge of the fundamentals of electricity. Topics introduced in this course include magnetism, DC and AC fundamentals, principals of electricity, as well as an overview of transformer operation. Students will be able to apply theories learned in the maintenance and repair of electrical equipment as it applies to the electric utility industry.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Co-requisites:** 804-315

Complete Course Listing

## **413-304 Safety Procedures I-Line Technicians**

**Credits:** 0.5-1

This course introduces the student to safety in the electric utility industry. Students interpret safety precautions in multiple work situations, adhering to OSHA regulations. Students will be able to apply safety rules and procedures in simulated work situations.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Co-requisites:** (413-303)

Complete Course Listing

## **413-305 Safety Procedures II-Line Technicians**

**Credits:** 0.5-1

This course continues and expands on topics introduced in Safety Procedures I. Students will increase their knowledge in safe handling of energized conductors and underground lines through the analysis of safe work practices and accident investigations. Students will understand a line technician's responsibility in protecting work areas and the public in everyday work and emergency situations.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** 413-315

Complete Course Listing

## **413-307 Underground and System Automation**

**Credits:** 0.05-1

This course introduces students to the basics of smart grids. Students will examine GPS mapping, utility system automation, and metering. Students will be able to identify different aspects of the smart grid and how it is used in the distribution of electricity to various consumers.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** 413-315

Complete Course Listing

## **413-310 Electric Power Distribution 1A**

**Credits:** 1-5

This course introduces students to the generation, transmission, and distribution systems used to supply power to consumers. Students will operate digger-derrick trucks, set and climb power poles, as well as engage in preparing ropes and knots for lifting and hoisting materials into the air. This course also strengthens the students' knowledge of the types and functions of basic materials used on the job as well as following the procedures for proper use of these materials in the field.

**Aid Code:** 31 - undefined.

**Co-requisites:** (413-304)

Complete Course Listing

## **413-315 Electric Power Distribution 1B**

**Credits:** 1-5

This course is a continuation of Electric Power Distribution 1A where students will use their knowledge to construct overhead single and three-phase power lines. Emphasis will be placed on the student's ability to follow safety rules and construction standards in order to build power lines to specifications provided. In preparation for coursework in the second semester of this program, students examine the basics of transformer operation.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Co-requisites:** (413-310)

Complete Course Listing

## **413-320 Electric Power Distribution 2A**

**Credits:** 1-5

This course is a continuation of Electric Power Distribution 1B. Students apply the theory of three-phase electrical power systems, including wye and delta systems, in order to maintain and construct transformer installations. Students engage in simulated troubleshooting situations and investigate problems which lead them to actively participate in solving the problem.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** 413-315

Complete Course Listing

**413-325 Electric Power Distribution 2B**

**Credits:** 1-5

This course is a continuation of Electric Power Distribution 2A. Students apply the principles of construction and maintenance of an underground residential distribution (URD). Students will engage in the installation underground wire and related equipment of a URD system. They will also operate trenching equipment as well as perform the removal of overhead lines and structures. At the conclusion of this course, students will have the necessary knowledge and skills to begin work in the electric utility industry.

**Aid Code:** 31 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Co-requisites:** 413-320

Complete Course Listing

**413-401 Arc Flash-8**

**Credits:** .8

This course will teach fundamental electrical concepts, hazard control measures, and electrical industry safety standards. It will help students identify circumstance that can create arc flashes to reduce the risk of electrical injuries.

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-402 Transformer**

**Credits:** 0.1-3

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-403 Arc Flash-8**

**Credits:** .8

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-409 Electrical Assembly and Parts-30**

**Credits:** .75

This course covers the basic tools, electrical components, and assembly skills needed to fabricate conduit according to project specifications.

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-426 Electric Controls**

**Credits:** 0.2-4

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-481 National Electrical Code**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-482 National Electrical Code-Adv**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-485 Industry Electrical 12**

**Credits:** 1.2

This course will teach basic fundamentals of AC/DC and electric motors.

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-486 Industrial Electricity I**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-489 Industry Electrical-36**

**Credits:** 3.6

This training teaches AC/DC circuits, electric motors, VFD's, sensors, relay logic, and Programmable Logic Controllers (PLC's).

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-490 Servo-Mechanisms/Robotics**

**Credits:** 0.2-3.6

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-491 Residential Wireman Training**

**Credits:** 0.2-5

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-493 Prog Controllers W/NC Progrmng**

**Credits:** 0.2-4.2

**Aid Code:** 47 - undefined.

Complete Course Listing

**413-510 JAC Electrician I**

**Credits:** 1-2

This course follows the first semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-511 JAC Electrician II****Credits:** 1-2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-512 JAC Electrician III****Credits:** 1-2

This course follows the third semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-513 JAC Electrician IV****Credits:** 1-2

This course follows the fourth semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-514 JAC Electrician V****Credits:** 1-2

This course follows the fifth semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-515 JAC Electrician VI****Credits:** 1-2

This course follows the sixth semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-516 JAC Electrician VII****Credits:** 1-2

This course follows the seventh semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-517 JAC Electrician VIII****Credits:** 1-2

This course follows the eighth semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-518 JAC Electrician IX****Credits:** 1-2

This course follows the ninth semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-519 JAC Electrician X****Credits:** 1-2

This course follows the tenth semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-530 ABC Electrician I****Credits:** 2

This course follows the first semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-531 ABC Electrician II****Credits:** 2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-532 ABC Electrician III****Credits:** 2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-533 ABC Electrician IV****Credits:** 2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-534 ABC Electrician V****Credits:** 1.25-2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-535 ABC Electrician VI**

**Credits:** 2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-536 ABC Electrician VII**

**Credits:** 2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-537 ABC Electrician VIII**

**Credits:** 2

This course follows the second semester of the National Joint Apprenticeship and Training Committee (NJATC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-750 DC Electricity for Industrial Electricians**

**Credits:** 1-1.75

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-751 AC Electricity for Industrial Electricians**

**Credits:** 1-2

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-752 Codes for Industrial Electricians 1: Introduction to the NEC**

**Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-753 Codes for Industrial Electricians 2: OCPD and Electrical Device Installations**

**Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

#### **413-754 Codes for Industrial Electricians 3: Article 250 Part A**

**Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-755 Codes for Industrial Electricians 4: Article 250 Part B****Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-756 Codes for Industrial Electricians 5: Article 300 Cords/Cables, and Hazardous Installations****Credits:** 0.1-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-757 Codes for Industrial Electricians 6: Conductors, Raceways and Data/Communication Cables****Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-758 Codes for Industrial Electricians 7: Motors and Generators****Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-759 Codes for Industrial Electricians 8: Transformers****Credits:** 0.05-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-760 Industrial Electrician Transformers****Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-761 Industrial Electrician Motors & Generators

**Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-762 Industrial Electrician Motor Controls 1

**Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-763 Industrial Electrician Motor Controls 2

**Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-764 Industrial Electrician Motor Controls 3

**Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-765 Power Systems & Variable Speed Drives for Industrial Electricians

**Credits:** 1-2

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-766 Fluid Power Systems for Industrial Electricians - Pneumatics

**Credits:** 0.05-0.5

The hydraulics course is customized for Industrial Electricians and relates the basics of hydraulic theory and hydraulic components. Safety and the interrelationship between hydraulic power with electrical control is emphasized.

**Aid Code:** 50 - undefined.

Complete Course Listing

### 413-767 Fluid Power Systems for Industrial Electricians-Hydraulics

**Credits:** 0.05-0.5

The hydraulics course is customized for Industrial Electricians and relates the basics of hydraulic theory and hydraulic components. Safety and the interrelationship between hydraulic power with electrical control is emphasized.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-768 Industrial Electrician Solid State Electronics****Credits:** 1-1.75

This course provides the apprentice with the skills and knowledge for troubleshooting basic solid-state devices and circuits. The construction, identification, and operating characteristics of solid-state devices is investigated. The apprentice builds test circuits, gathers and analyzes data, and follows safety procedures. Methods for locating defective components are applied. The replacement of printed circuit board components is performed. Also examined is the effect of temperature on the operation of solid-state devices.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-769 Industrial Electrician Programmable Logic Controllers: 1****Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-770 Industrial Electrician Programmable Logic Controllers: 2****Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-771 Industrial Electrician Programmable Logic Controllers: 3****Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-772 Green Awareness for the E & I Trades****Credits:** 0.5-1

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-773 Safety & Print Reading for Industrial Electricians****Credits:** 0.25-0.5

This is the new aligned curriculum model for related instruction that is effective for the 2013-2014 school year. This program configuration adds the new green awareness module in 2012, and aligns related instruction with employer competencies which were prioritized in 2010. This model illustrates best practices from the WTCS colleges to deliver 720 hours of related instruction to apprentices in 4 years, accelerates the first year coursework, assumes a 16-week semester, and maintains 4 hours per week in class (or the equivalent). The colleges and employers will have flexibility to schedule each of the terms based on local needs.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-781 Introduction to the Trade, Electrical Theory DC, and Safety for ABC Electricians****Credits:** 0.5-2

Course competencies include an introduction to the electrical codes and safety. In addition, DC theory is applied to electrical circuits, devices, and components. DC circuit calculations help develop trade math skills. This course follows the first semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-782 Basic Wiring, Blueprint Reading, Electrical Theory AC, and Introduction to the NEC****Credits:** 0.5-2

Course explores electrical codes, safety, and AC theory. In addition, basic wiring principles and print reading are introduced to help build trade skills for ABC electrician apprentices. The use of test equipment used by the trade is included. This course follows the second semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-783 Applied Electrical Theory/AC, Motor Basics, Conduit and Lighting systems for ABC Electricians**
**Credits:** 0.5-2

Course competencies include a review of AC electrical theory, circuits, and devices. Apprentices will also examine basic lighting systems, and develop skills bending and fabricating conduit. Course include introduction to motors and motor installations. Electrical safety work practices and codes are reinforced. This course follows the third semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

**Pre-requisites:** 413-782

Complete Course Listing

**413-784 Grounding, Terminations, and Introduction to Renewable Energy**
**Credits:** 0.5-2

Course competencies include conductor terminations and splices, methods and practices for installing electrical devices, and applying NEC requirements to various installations. Apprentices will also be introduced to grounding and bonding, overcurrent protective devices, and cable trays. Electrical safety work practices and applicable electrical codes will be reinforced. An introduction to photovoltaic, wind, water, geothermal, and other renewable energy applications will be explored. This course follows the fourth semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

**Pre-requisites:** 413-783

Complete Course Listing

**413-785 Intermediate Applications, Motor Controls, and Commercial Installations for ABC Electricians**
**Credits:** 0.5-2

Course competencies address load calculations, conductor selection and sizing, lighting systems, intermediate wiring applications, and the NEC requirements and installation procedures for various types of electrical equipment. Electrical safety work practices and codes will be reinforced in this course. Equipment requirements for hazards locations are discussed. This course follows the fifth semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

**Pre-requisites:** 413-784

Complete Course Listing

**413-786 Motor Applications, Motor Controls, and Commercial Installations for ABC Electricians**
**Credits:** 0.5-2

Course competencies examine selecting and wiring transformers, applying NEC requirements for commercial electrical services, and motor controls. Apprentices will also explore low voltage systems and components. Electrical safety work practices and codes are reinforced in this course. This course follows the sixth semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

**Pre-requisites:** 413-785

Complete Course Listing

**413-787 Emergency and Security Systems for ABC Construction Electricians**
**Credits:** 0.5-2

Course examines back-up power equipment, special communications systems, wiring devices, and installation requirements for emergency and security systems. Apprentices will explore electric generators and energy storage, fire alarms, DACS systems and related equipment. Electrical safety work practices and codes will be reinforced in this course. This course follows the seventh semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

**Pre-requisites:** 413-786

Complete Course Listing

**413-788 Systems Controls for ABC Construction Electricians**
**Credits:** 0.05-2

Course examines advanced controls, including solid state, PLC hardware, starters, variable frequency drives, and electrical equipment associated with system control. NEC requirements for HVAC, heat tracing, medium voltage equipment, and special occupancies are included. Apprentices will also relate motor operations to maintenance and replacement job tasks. This course follows the eighth semester of the Associated Builders and Contractors of Wisconsin (ABC) approved curriculum.

**Aid Code:** 50 - undefined.

Complete Course Listing

**413-999E EPD CDL-A EXAM**
**Credits:** 0

Complete Course Listing