

ELECTRIC POWER DISTRIBUTION (413)

Information provided includes course descriptions by subject only. For complete 2018-2019 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.
Complete Course Listing

413-304 Safety Procedures I-Line Technicians Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.
Co-requisites: (804-304 or 804-306 or 804-113) and (413-303) and (413-306) and (413-310) and (413-315)
Complete Course Listing

413-305 Safety Procedures II-Line Technicians Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.
Pre-requisites: (413-315)
Co-requisites: (413-307) and (413-320) and (413-325)
Complete Course Listing

413-306 Commercial Driver's License (CDL) Preparation Credits: 1

This course prepares students to take the written portion of the Class A Commercial Driver's License test. Students, upon completion, will take the written test at the Department of Motor Vehicles' test center to acquire the instruction permit.

Aid Code: 31 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.

Co-requisites: (413-303) and (413-304) and (413-310) and (413-315)
Complete Course Listing

413-307 EPD Mapping and Automation Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.

Pre-requisites: (413-315)

Co-requisites: (413-305) and (413-320) and (413-325)
Complete Course Listing

413-310 Electric Power Distribution 1A Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.

Co-requisites: (804-304 or 804-306 or 804-113) and (413-303) and (413-304) and (413-306) and (413-315)
Complete Course Listing

413-315 Electric Power Distribution 1B Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.

Co-requisites: (804-304 or 804-306 or 804-113) and (413-303) and (413-304) and (413-306) and (413-310)
Complete Course Listing

413-320 Electric Power Distribution 2A

Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.

Pre-requisites: (413-315)

Co-requisites: (413-305) and (413-325) and (413-307)

Complete Course Listing

413-325 Electric Power Distribution 2B

Credits: 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 - One-year Technical Diploma.

Restrictions: Restricted to students admitted to Electric Power Distribution Program.

Pre-requisites: (413-315)

Co-requisites: (413-305) and (413-320) and (413-307)

Complete Course Listing

413-510 JAC Electrician I

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-511 JAC Electrician II

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-512 JAC Electrician III

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-513 JAC Electrician IV

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-514 JAC Electrician V

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-515 JAC Electrician VI

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-516 JAC Electrician VII

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-517 JAC Electrician VIII

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-518 JAC Electrician IX

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-519 JAC Electrician X

Credits: 2

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

Aid Code: 50 - Apprentice.

Complete Course Listing

413-530 ABC Electrician I

Credits: 2

Aid Code: 50 - Apprentice.

Complete Course Listing

413-531 ABC Electrician II

Credits: 2

Aid Code: 50 - Apprentice.

Complete Course Listing

413-532 ABC Electrician III**Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-533 ABC Electrician IV****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-534 ABC Electrician V****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-535 ABC Electrician VI****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-536 ABC Electrician VII****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-537 ABC Electrician VIII****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-538 ABC Electrician IX****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-539 ABC Electrician X****Credits:** 2**Aid Code:** 50 - Apprentice.
Complete Course Listing**413-750 DC Electricity for Industrial Electricians****Credits:** 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 - Apprentice.
Complete Course Listing**413-751 AC Electricity for Industrial Electricians****Credits:** 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 - Apprentice.
Complete Course Listing**413-752 Codes for Industrial Electricians 1: Introduction to the NEC****Credits:** .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 - Apprentice.
Complete Course Listing**413-753 Codes for Industrial Electricians 2: OCPD and Electrical Device Installations****Credits:** .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 - Apprentice.
Complete Course Listing**413-754 Codes for Industrial Electricians 3: Article 250 Part A****Credits:** .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 - Apprentice.
Complete Course Listing

413-755 Codes for Industrial Electricians 4: Article 250 Part B

Credits: .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 - Apprentice.

Complete Course Listing

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

Credits: .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 - Apprentice.

Complete Course Listing

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

Credits: .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 - Apprentice.

Complete Course Listing

413-758 Codes for Industrial Electricians 7: Motors and Generators

Credits: .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 - Apprentice.

Complete Course Listing

413-759 Codes for Industrial Electricians 8: Transformers

Credits: .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 - Apprentice.

Complete Course Listing

413-760 Industrial Electrician Transformers

Credits: 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 - Apprentice.

Complete Course Listing

413-761 Industrial Electrician Motors & Generators

Credits: 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 - Apprentice.

Complete Course Listing

413-762 Industrial Electrician Motor Controls 1

Credits: 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 - Apprentice.

Complete Course Listing

413-763 Industrial Electrician Motor Controls 2**Credits:** 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 - Apprentice.

Complete Course Listing

413-764 Industrial Electrician Motor Controls 3**Credits:** 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 - Apprentice.

Complete Course Listing

413-765 Power Systems & Variable Speed Drives for Industrial Electricians**Credits:** 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 - Apprentice.

Complete Course Listing

413-766 Fluid Power Systems for Industrial Electricians - Pneumatics**Credits:** .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 - Apprentice.

Complete Course Listing

413-767 Fluid Power Systems for Industrial Electricians-Hydraulics**Credits:** .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 - Apprentice.

Complete Course Listing

413-768 Industrial Electrician Solid State Electronics**Credits:** 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 - Apprentice.

Complete Course Listing

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

Complete Course Listing

413-770 Industrial Electrician Programmable Logic Controllers: 2**Credits:** 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 - Apprentice.

Complete Course Listing

413-771 Industrial Electrician Programmable Logic Controllers: 3

Credits: 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 - Apprentice.

Complete Course Listing

413-772 Green Awareness for the E & I Trades

Credits: 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 - Apprentice.

Complete Course Listing

413-773 Safety & Print Reading for Industrial Electricians

Credits: 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 - Apprentice.

Complete Course Listing