

National Joint Apprenticeship and Training Committee for the Electrical Industry

The National Joint Apprenticeship and Training Committee for the Electrical Industry (NJATC) is headquartered in Upper Marlboro, Maryland. The Executive Director, appointed by the NJATC Executive Committee, administers the program, and the national office is responsible for curriculum development, production, and distribution.

Additionally, the NJATC develops national standards, operational procedures, and curriculum for local implementation. Workshops are conducted by the NJATC on a national, regional, and local level to ensure that national policies and curricula are understood, implemented, and properly utilized. Additionally, the NJATC conducts an annual training institute, which is presented at a major university specializing in educator development. This full week of college-level professional training is dedicated to the development of instructional skills, technological awareness, curriculum enhancement and a superior educational system. The Institute is designed to be an accumulative four-year educational experience for all instructors teaching in the NJATC's programs. To accomplish this mission, the Institute maintains a full-time staff comprised of curriculum specialists, technical writers, clerical and secretarial professionals, and other personnel.

The five-year inside apprenticeship program consists of a course of study designed to instruct the student in electrical theory, design, installation, and maintenance of electrical systems providing power, light, heat, air conditioning, refrigeration, control, communication, monitoring, and automation to residential, commercial, and industrial markets.

URL: <http://www.njatc.org>

NJATC Apprentice Inside Wiremen 1st Year Course

ACE Number: NJAT-0001

Credit Type: Course

Version 4

Course Title: NJATC Apprentice Inside Wiremen 1st Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 200 HOURS (MINIMUM) AND 2,000 HOURS (1 YEAR) FIELD COOPERATIVE EXPERIENCE

Version Dates: 07/01/2005 - Present

Instruction: Major topics covered in the course are DC circuits with lab, National Electrical Code, health and safety, blueprint reading, units and measurements, unit conversions, algebraic equations, ratios, powers of 10, and electrical construction materials and methods. Methods of instruction include lecture, discussion, demonstration, and audio/visual and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in Blueprint Reading, 1 semester hour in National Electrical Code, 3 semester hours in DC Circuits, 1 semester hour in DC Circuits Lab, 1 semester hour in Electrical Construction Lab, and 1 semester hour in Electrical Construction Field Experience I (Total of 8 semester hours) (12/05).

Version 3

Course Title: NJATC Apprentice Inside Wiremen 1st Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 200 hours (minimum) and 2,000 hours(1 year) field cooperative experience.

Version Dates: 08/01/2000 - 06/30/2005

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate knowledge, skills, and abilities to apply the principles of basic electricity; apply the principles and practices of health and safety; read engineering drawings; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are DC electricity, National Electrical Code, labor relations and history, health and safety, engineering drawing, reading and sketching, units and measurements, geometry, algebraic equations, ratios, powers, roots, basic trigonometry, electrical construction materials and methods, and electrical construction field experience. Methods of instruction include lecture, discussion, demonstration, and audio/visual and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in DC Circuits; 1 semester hour in DC Circuits Laboratory; 1 semester hour in Blueprint Reading; 1 semester hour in Electrical Construction Laboratory I; 1 semester hour in National Electrical Code I; 1 semester hour in Labor Relations and History I; 1 semester hour in Industrial Safety I; and 1 semester hour in Electrical Construction Field Experience I, for a total of 9 semester hours (8/00).

Version 2

Course Title: NJATC Apprentice Inside Wiremen 1st Year Course
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 180 hours (minimum) and 2,000 hours field cooperative experience (1 year)
Version Dates: 11/01/1997 - 07/31/2000
Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in DC Circuits Lab, 1 semester hour in Electrical Construction Lab 1, 1 semester hour in National Electrical Code Theory, 1 semester hour in Electrical Construction Field Experience I for a total of 4 semester hours (11/97).

Version 1

Course Title: NJATC Apprentice Inside Wiremen 1st Year Course
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 130 hours and 2,000 hours field cooperative experience (1 year)
Version Dates: 12/01/1982 - 10/01/1997
Objective: Initial year of a five-year course of study and field experience to prepare an apprentice for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate knowledge, skills, and abilities to apply the principles of basic electricity, National Electrical Codes, engineering reading, drawing and sketching, and mathematics in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level necessary to advance to more complex learning and field work; and complete all first year program required to advance and instructor recommendation to advance to next phase of the five year program.
Instruction: Major topics covered in the course are DC electricity, National Electrical Code, engineering drawing, reading and sketching, units and measurements, geometry, algebraic equations, ratios, powers, roots, basic trigonometry, electrical construction materials and methods, and electrical construction field experience. Methods of instruction include lecture, discussion, demonstration, and audio/visual and field cooperative training.
Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in Basic Electricity, 1 semester hour in National Electrical Code, 1 semester hour in Blueprint Reading and Sketching, 2 semester hours in Field Experience in Electrical Construction, 1 semester hour in Technical Math for a total of 7 semester hours (12/92).

NJATC Apprentice Inside Wiremen 2nd Year Course

ACE Number: NJAT-0002
Credit Type: Course

Version 4

Course Title: NJATC Apprentice Inside Wiremen 2nd Year Course
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 200 hours (minimum) and 1,500 hours (1 year) field cooperative experience.
Version Dates: 07/01/2005 - Present
Instruction: Major topics covered in the course are AC resistive, inductive, capacitive, and 3 phase circuits; introduction to oscilloscopes and multimeters; RC, RL, and RLC circuits; single and 3 phase transformer circuits; blueprint reading; and electrical construction materials and methods. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 3 semester hours in AC circuits, 1 semester hour in AC Circuits Lab, 2 semester hours in National Electrical Code II, 1 semester hour in Electrical Instrumentation, 1 semester hour in Blueprint Reading, and 1 semester hour in Electrical Construction Field Experience II. (Total of 9 semester hours) (12/05).

Version 3

Course Title: NJATC Apprentice Inside Wiremen 2nd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 200 hours (minimum) and 1,500 hours (1 year) field cooperative experience.

Version Dates: 08/01/2000 - 06/30/2005

Learning Outcome: Upon successful completion of this course, the student will be able to further apply the principles of basic electricity; apply the principles and practices of health and safety; read engineering drawings; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are AC resistive, inductive, capacitive, and 3 phase circuits; introduction to oscilloscopes and multimeters; R-C, R-L, and R-L-C circuits; single and 3 phase transformer circuits; vector algebra; engineering drawing; reading and sketching; electrical construction materials and methods; labor relations and history, health and safety, and electrical construction field experience. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in AC Circuits; 1 semester hour in Blueprint Reading; 1 semester hour in National Electrical Code II; 1 semester hour in Electrical Construction Laboratory II; 1 semester hour in AC Circuits Laboratory; 1 semester hour in Electrical Instrumentation; 1 semester hour in Labor Relations and History II; 1 semester hour in Industrial Safety II; and 1 semester hour in Electrical Construction Field Experience II, for a total of 10 hours (8/00).

Version 2

Course Title: NJATC Apprentice Inside Wiremen 2nd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 160 hours (minimum) and 2,000 hours field cooperative experience (1 year); 180 hours (minimum) and 2,000 hours field cooperative experience (1 year); 200 hours (minimum) and 1,500 hours (1 year) field coop

Version Dates: 11/01/1997 - 07/31/2000

Credit Recommendation: In the lower division baccalaureate/associate degree category, 4 semester hours in AC-DC Circuits (cumulative of years 1 & 2), 2 semester hours in Engineering Drawing (cumulative of years 1 & 2), 1 semester hour in Electrical Construction Lab II, 1 semester hour in A-C Circuits Lab, 1 semester hour in Electrical Construction Field Experience II for a total of 9 hours (11/97).

Version 1

Course Title: NJATC Apprentice Inside Wiremen 2nd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 160 hours (minimum) and 2,000 hours field cooperative experience (1 year); 180 hours (minimum) and 2,000 hours field cooperative experience (1 year); 200 hours (minimum) and 1,500 hours (1 year) field coop

Version Dates: 12/01/1982 - 10/31/1997

Objective: Second year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to further mastery of knowledge, skills, and abilities to apply the principles of basic electricity, National Electrical Codes, engineering drawing, reading and sketching, Mathematics, and electrical construction materials and methods in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level necessary to advance to more complex learning and field work; and complete all second year program requirements and instructor recommendation to advance to next phase of the five year program. Upon successful completion of this course, the student will be able to further apply the

principles of basic electricity; apply the principles and practices of health and safety; read engineering drawings; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level necessary to advance to more complex learning and field work; and complete all second year program requirements and instructor recommendation to advance to next phase of the five year program.

Instruction: Major topics covered in the course are AC resistive, inductive, capacitive, and 3 phase circuits; introduction to oscilloscopes and multimeters; R-C, R-L, and R-L-C circuits; single and 3 phase transformer circuits; vector algebra; engineering drawing; reading and sketching; electrical construction materials and methods; and electrical construction field experience. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training. Major topics covered in the course are AC resistive, inductive, capacitive, and 3 phase circuits; introduction to oscilloscopes and multimeters; R-C, R-L, and R-L-C circuits; single and 3 phase transformer circuits; vector algebra; engineering drawing; reading and sketching; electrical construction materials and methods; labor relations and history, health and safety, and electrical construction field experience. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in Basic Electricity, 1 semester hour in National Electrical Code, 1 semester hour in Blueprint Reading and Sketching, 2 semester hours in Field Experience II in Electrical Construction, 1 semester hour in Electrical Construction Materials and Methods, 2 semester hour in Technical Math for a total of 9 semester hours (12/92).

NJATC Apprentice Inside Wiremen 3rd Year Course

ACE Number: NJAT-0003

Credit Type: Course

Version 4

Course Title: NJATC Apprentice Inside Wiremen 3rd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 180 hours (minimum) and 1,500 hours (1 year) field cooperative experience.

Version Dates: 07/01/2005 - Present

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of principles of electronic devices; read industrial blueprints; apply the principles and practices of health and safety; demonstrate competency in skills for grounding and bonding; and complete all NJATC examinations (written, demonstration, and competency) with a passing grade.

Instruction: Major topics covered in the course are commonly used electronic devices, grounding systems, overcurrent protection and load calculations, National Electrical Code, labor relations and history, health and safety, and field experience in electrical construction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in Labor Relations and History; 1 semester hour in Industrial Safety III; 1 semester hour in Industrial Blueprint Reading; 3 semester hour in Electronic Devices, 1 semester hour in Electronics Laboratory; 2 semester hours in Power Systems Protection; 1 semester hour in Power System Protection Laboratory; and 2 semester hours in National Electrical Code (Total of 12 semester hours) (12/05).

Version 3

Course Title: NJATC Apprentice Inside Wiremen 3rd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 180 hours (minimum) and 1,500 hours (1 year) field cooperative experience.

Version Dates: 08/01/2000 - 06/30/2005

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of principles of electronic devices; read industrial blueprints; apply the principles and practices of health and safety; demonstrate competency in skills for power system protection; and complete all NJATC examinations (written, demonstration, and competency) with a passing grade.

- Instruction:** Major topics covered in the course are diodes, transistors, timers and grounding systems, overcurrent protection and load calculations, National Electrical Code, labor relations and history, health and safety, and field experience in electrical construction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
- Credit Recommendation:** In the lower division baccalaureate/associate degree category, 3 semester hours in Industrial Electronics; 1 semester hour in Basic Electronics Laboratory; 1 semester hour in Construction Blueprint Reading; 2 semester hours in Power System Protection; 1 semester hour in Labor Relations and History III; 1 semester hour in National Electrical Code III; 1 semester hour in Industrial Safety III; and 1 semester hour in Electrical Construction Field Experience III, for a total of 11 semester hours (8/00).

Version 2

- Course Title:** NJATC Apprentice Inside Wiremen 3rd Year Course
- Location:** National Joint Apprenticeship and Training Committee for the Electrical Industry
- Length:** 180 hours (minimum) and 2,000 hours (1 year) field cooperative experience (1 year) field cooperative experience
- Version Dates:** 11/01/1997 - 07/31/2000
- Objective:** Student will master principles of basic electricity, national electrical codes, blueprint reading and sketching and technical mathematics in classroom and field.
- Instruction:** Methods of instruction include classroom exercises, laboratory, lecture, and practical exercises. General course topics include.
- Credit Recommendation:** In the lower-division baccalaureate/associate degree category, 3 semester hours in industrial electricity, 1 in basic electrical laboratory, 1 in electrical circuit fault analysis, 2 in industrial safety, 3 in college algebra, and 2 in field experience in electrical construction (8/00).

Version 1

- Course Title:** NJATC Apprentice Inside Wiremen 3rd Year Course
- Location:** National Joint Apprenticeship and Training Committee for the Electrical Industry
- Length:** 160 hours (minimum) and 2,000 hours field cooperative experience (1 year)
- Version Dates:** 12/01/1982 - 10/31/1997
- Learning Outcome:** Upon successful completion of this course, the student will be able to demonstrate mastery of principles of electronic devices, National Electrical Codes, engineering drawing, reading and sketching, and mathematics in classroom, demonstration and supervised field experience; demonstrate competency in skills and abilities in motor controls, electrical machinery, and industrial safety practices in classroom and field experience environment; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level necessary to advance to more complex learning and field work; and complete all third year program requirements and instructor recommendation to advance to next phase of the five year program.
- Instruction:** Versions 1 and 2: Major topics covered in the course are diodes, transistors, timers and grounding systems, over-current protection and load calculations, National Electrical Code, and field experience in electrical construction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
- Credit Recommendation:** In the lower division baccalaureate/associate degree category, 2 semester hours in Basic Electricity; 1 semester hour in Blueprint reading and sketching; 2 semester hours in Field Experience in motor controls; 3 semester hours in Motor Controls; 3 semester hours in Electrical Machinery; and 1 semester hour in Industrial Safety Practices, for a total of 11 semester hours (12/92)

NJATC Apprentice Inside Wiremen 4th Year Course

- ACE Number:** NJAT-0004
- Credit Type:** Course

Version 4

- Course Title:** NJATC Apprentice Inside Wiremen 4th Year Course

Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	180 HRS (MINIMUM) AND 1,500 HRS (1 YEAR) FIELD COOPERATIVE EXPERIENCE
Version Dates:	07/01/2005 - Present
Learning Outcome:	Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge, skills, and abilities in motor controls, digital electronics and PLC's in classroom demonstration and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.
Instruction:	Major topics covered in the course are AC and DC motors, starters, motor controllers, AC and DC drives, control transformers, lightening protection systems, basic digital logic circuits, PLC's, and field experience in electrical construction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
Credit Recommendation:	In the lower division baccalaureate/ associate degree category 1 semester hour: AC Motor; 2 semester hours: AC Circuits II; 1 semester hour: Motor Controls Laboratory; 3 semester hours: Motor Control Circuits; 1 semester hours: digital electronic fundamentals and laboratory; 1 semester hour, electrical construction field experience IV; 1 semester hour: National Electrical code IV for a total of 10 semester hours

Version 3

Course Title:	NJATC Apprentice Inside Wiremen 4th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	180 hours (minimum) and 1,500 hours (1 year) field cooperative experience
Version Dates:	08/01/2000 - 06/30/2005
Objective:	Fourth year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be ble to demonstrate mastery of knowledge, skills, and abilities in motor controls, electronics and industrial electronics in classroom demonstration and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.
Instruction:	Major topics covered in the course are AC and DC motors, starters, motor controllers, AC and DC drives, control transformers, resonance, filters, power factor correction, lightening protection systems, basic digital logic circuits, fiber optic theory, and field experience in electrical construction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
Credit Recommendation:	In the lower division baccalaureate/associate degree category, 1 semester hour in AC Motors; 2 semester hours in AC Circuits II; 1 semester hour in Motor Controls Laboratory; 3 semester hours in Motor Control Circuits; 1 semester hour in Digial Electronic Fundamentals and Laboratory; 1 semester hour in Electrical Construction Field Experience IV; and 1 semester hour in National Electrical Code IV, for a total of 10 semester hours (8/00).

Version 2

Course Title:	NJATC Apprentice Inside Wiremen 4th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	180 hours (minimum) and 2,000 hours field cooperative experience (1 year);
Version Dates:	11/01/1997 - 07/31/2000
Objective:	student will show knowledge, skills, and abilities in hvac, motor controls, electronics and industrl electronics in classroom and field experience.
Instruction:	Methods of instruction include classroom exercises, laboratory, lecture, and practical exercises. General course topics include.
Credit Recommendation:	In the lower-division baccalaureate/associate degree category, 4 semester hours in AC/DC motors, 1 in motor controls laboratory, 2 in motor control circuits, 3 in digital circuit fundamentals, 2 in field experience in electrical construction and 1 in digital circuits laboratory (8/00).

Version 1

Course Title:	NJATC Apprentice Inside Wiremen 4th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry

Length:	160 hours (minimum) and 2,000 hours field cooperative experience (1 year)
Version Dates:	12/01/1982 - 10/31/1997
Objective:	Fourth year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge, skills, and abilities in motor controls, electronics and industrial electronics in classroom demonstration and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level to advance to more complex learning and field work; and complete all fourth year program requirements and instructor recommendation to advance to next phase of the five year program.
Instruction:	Major topics covered in the course are AC and DC motors, starters, motor controllers, AC and DC drives, control transformers, resonance, filters, power factor correction, basic digital logic circuits, fiber optic and optoelectronic theory and applications, and field experience in electrical construction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
Credit Recommendation:	In the lower division baccalaureate/associate degree category, 3 semester hours in Electronics, 3 semester hours in Industrial Electronics, 2 semester hours in Motor Controls, 2 semester hours in Field Experience in Electrical Construction, 1 semester hour in HVAC for a total of 11 semester hours (12/92).

NJATC Apprentice Inside Wiremen 5th Year Course

ACE Number:	NJAT-0005
Credit Type:	Course

Version 4

Course Title:	NJATC Apprentice Inside Wiremen 5th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	180 hours (minimum) and 1,500 hours (1 year) field cooperative experience.
Version Dates:	07/01/2005 - Present
Objective:	Fifth and final year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be able to demonstrate complete mastery of knowledge, skills, and abilities in the use of National Electrical Codes, instrumentation and controls techniques and equipment, build networking cable systems, install and inspect fire alarm systems, install security and telephone monitoring systems, use distributed power generation systems, supervise field experience in electrical construction, apply instrumentation and testing techniques, and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.
Instruction:	Major topics covered in the course are National Electrical Code, security and fire alarm systems, sensors, instrumentation set-up and calibration, theory of flow, pressure, level, temperature, pneumatics, telephone and network cable wiring systems, distributed power generation, and uninterruptible power supplies. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
Credit Recommendation:	In the lower division baccalaureate/associate degree category, 1 semester hour in Fundamentals of Fire Alarm System Installation and Inspection, 1 semester hour in Security Systems Installation and Telephone Monitoring Systems, 2 semester hours in Fundamentals of Instrumentation Process and Controls, 3 semester hours in Fundamentals of Network Cabling Systems, 2 semester hours in Fundamentals of Distributed Power Generation, 3 semester hours in National Electrical Code and Practices, and 1 semester hour in Electrical Construction Field Experience V (Total of 13 semester hours) (12/05).

Version 3

Course Title:	NJATC Apprentice Inside Wiremen 5th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	180 hours (minimum) and 1,500 hours (1 year) field cooperative experience.

Version Dates:	08/01/2000 - 06/30/2005
Objective:	Fifth and final year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be able to demonstrate complete mastery of knowledge, skills, and abilities in the use of National Electrical Codes, instrumentation and testing techniques and equipment, and industrial electronics in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level to complete program requirements for Journeyman Inside Wireman; and complete all fifth year program requirements and instructor recommendation to achieve the designation as Journeyman Inside Wireman in the electrical construction (inside) industry. Upon successful completion of this course, the student will be able to apply instrumentation and testing techniques; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.
Instruction:	Major topics covered in the course are National Electrical Code, security and fire alarm systems, sensors, theory of flow, pressure, level, temperature, pneumatic telephone wiring, high voltage safety and testing, heating, ventilating air conditioning (hvac) theory, programmable logic controllers, controls and troubleshooting, and uninterruptible power supplies. Methods of instruction. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.
Credit Recommendation:	In the lower division baccalaureate/associate degree category, 3 semester hours in Instrumentation and Testing; 3 semester hours in Industrial Electronics II; 2 semester hours in Programmable Logic Controllers; 1 semester hour in Electro-mechanical Troubleshooting; 4 semester hours in Physics of Electricity and Magnetism (cumulative of year 1-5); 1 semester hour in National Electrical Code V; and 1 semester hour in Electrical Construction Field Experience V, for a total of 15 semester hours (8/00).

Version 2

Course Title:	NJATC Apprentice Inside Wiremen 5th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	160 hours (minimum) and 2,000 hours field cooperative experience (1 year); 180 hours (minimum) and 2,000 hours field cooperative experience (1 year); 180 hours (minimum) and 1,500 hours (1 year) field coo
Version Dates:	11/01/1997 - 07/31/2000
Objective:	Fifth and final year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Credit Recommendation:	In the lower division baccalaureate/associate degree category, 1 semester hour in National Electrical Code; 3 semester hours in Instrumentation and Testing; 3 semester hours in Industrial Electronics; and 2 semester hours in Field Experience in Electrical Construction, for a total of 9 semester hours (12/92). In the lower division baccalaureate/associate degree category, 3 semester hours in Instrumentation and Testing; 3 semester hours in Industrial Electronics II; 1 semester hour in Electronic Instrumentation Lab; 1 semester hour in Electro-mechanical Troubleshooting; and 4 semester hours in Basic Physics (cumulative of years 1-5), for a total of 12 semester hours (11/97).

Version 1

Course Title:	NJATC Apprentice Inside Wiremen 5th Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	160 hours (minimum) and 2,000 hours field cooperative experience (1 year)
Version Dates:	12/01/1982 - 10/31/1997
Objective:	Fifth and final year of apprentice development for Journeyman Inside Wireman status in the electrical construction (inside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be able to demonstrate complete mastery of knowledge, skills, and abilities in the use of National Electrical Codes, instrumentation and testing techniques and equipment, and industrial electronics in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade. All field and classroom performance tests must be completed to the mastery level to complete program requirements for Journeyman Inside Wireman; and complete all fifth year program requirements and instructor recommendation to achieve the designation as Journeyman Inside Wireman in the electrical construction (inside)

industry.

Instruction: *Versions 1 and 2:*

Major topics covered in the course are security and fire alarm systems, sensors, instrumentation setup and calibration, theory of flow, pressure, level, temperature, pneumatics, telephone wiring, high voltage safety and testing, heating, ventilating, air conditioning (HVAC) theory, programmable controllers, controls and troubleshooting, and uninterruptible power supplies. Methods of instruction include lecture, discussion, demonstration, audio/visual material, laboratory, and field cooperative training.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in National Electrical Code; 3 semester hours in Instrumentation and Testing; 3 semester hours in Industrial Electronics; and 2 semester hours in Field Experience in Electrical Construction, for a total of 9 semester hours (12/92).

NJATC Apprentice Installer/Technician 1st Year Course

ACE Number: NJAT-0009

Credit Type: Course

Version 1

Course Title: NJATC Apprentice Installer/Technician 1st Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 160 hours (9 months) and 1,600 hours (1 year) field cooperative experience

Version Dates: 02/01/1998 - Present

Objective: To provide the first year first year of a three-year program of study and field experience for the Installer Technician program in the electrical construction industry with emphasis on telecommunications and low voltage systems.

Learning Outcome: Upon successful completion of this course, the student will be able to apply the principles of basic electricity (Telecommunications Industry Association/Electrical Industry Association (TIA/EIA) Standards and National Electrical Codes) including engineering reading, drawing and sketching, labor studies/history, industrial safety, mathematics in classroom instruction, demonstration, and supervised field experience related to low voltage installations in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are electrical circuit theory; care and use of trade tools; proper use and installation of materials; codes and standards including TIA/EIA Standards and National Electrical Codes; structured cabling systems, fiber optic cabling systems, and blueprint reading and drawing; and labor studies and history, and industrial safety. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises. All field and classroom performance tests must be successfully completed to advance to the next phase of the three-year program.

Credit Recommendation: In the vocational certificate or lower division baccalaureate/associate degree category, 3 semester hours in Basic Electricity, 3 semester hours in Construction Blueprint Reading, 2 semester hours in Electronic Assembly Techniques, 1 semester hour in Industrial Safety, 1 semester hour in Labor Relations and History for a total of 10 semester hours (8/00).

NJATC Apprentice Installer/Technician 2nd Year Course

ACE Number: NJAT-0010

Credit Type: Course

Version 1

Course Title: NJATC Apprentice Installer/Technician 2nd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 160 hours (9 months) and 1,600 hours (1 year) field cooperative experience

Version Dates: 02/01/1998 - Present

Objective: To provide the second year of a three-year program of study and field experience for the Installer Technician program in the electrical construction industry, with emphasis on telecommunications and low voltage systems.

Learning Outcome: Upon successful completion of this course, the student will be able to apply circuit theory toward use in low voltage installations, basic telephone systems, basic alarm systems, life safety systems, local area networks (LAN), paging systems, labor standards/history, industrial safety, and remote control and signaling systems in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are electrical theory, telephone systems, security systems, electrical and telecommunications standards and codes, local area networks, sound distribution systems, labor studies and history, industrial safety, and low voltage system installation methods. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises. All field and classroom performance tests must be successfully completed to advance to the next phase of the three-year program.

Credit Recommendation: In the vocational certificate or lower division baccalaureate/associate degree category, 1 semester hour in Industry Safety; 1 semester hour in Labor Relations and History; 2 semester hours in Electronic Assembly Techniques; 4 semester hours in Automatic Control and Feedback Systems; 2 semester hours in AC Circuit Analysis; 2 semester hours in DC Circuit Analysis; and 2 semester hours in Residential or Light Commercial Wiring for a total of 14 semester hours (8/00).

NJATC Apprentice Installer/Technician 3rd Year Course

ACE Number: NJAT-0011

Credit Type: Course

Version 1

Course Title: NJATC Apprentice Installer/Technician 3rd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 160 hours (9 months) and 1,600 hours (1 year) field cooperative experience

Version Dates: 02/01/1998 - Present

Objective: To provide the third year of a three-year program of study and field experience for the Installer Technician program in the electrical construction industry with emphasis on telecommunications and low voltage systems.

Learning Outcome: Upon successful completion of this course, the student will be able to apply the principles electronic based low voltage systems to include CCTV, video distribution systems, access control systems, nurse call systems, home automation and other low voltage systems, labor studies/history, and industrial safety in classroom instruction, demonstration, and supervised field experience; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are industry safety, residential/light commercial wiring, low voltage systems, telecommunications networking, solid state circuits, and labor studies and history and industrial safety. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises. All field and classroom performance tests must be successfully completed for the first two years as a prerequisite, with instructor recommendation, to advance to this phase of the three-year program.

Credit Recommendation: In the vocational certificate or lower division baccalaureate/associate degree category, 1 semester hour in Industrial Safety, 2 semester hours in Residential/Light Commercial Wiring, 3 semester hours in Low Voltage Systems, 3 semester hours in Telecommunications Networking, 3 semester hours in Solid State Circuits, and 1 semester hour in Labor Relations and History for a total of 13 semester hours (8/00).

NJATC Apprentice Lineman 1st Year Course

ACE Number: NJAT-0006

Credit Type: Course

Version 2

Course Title: NJATC Apprentice Lineman 1st Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 160 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience; 200 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience

Version Dates:	08/01/2000 - Present
Objective:	First year of a three year program of study and field experience for Journeyman Lineman status in the electrical construction (outside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be able to apply the principles of basic electricity; perform outside electrical construction activities under supervision; meet OSHA safety and CPR certification requirements; and understand the principles of labor relations and history and industrial safety.
Instruction:	Major topics covered in the course are basic AC/DC electricity, electrical safety, OSHA safety program, CPR, field experience in electrical construction with heavy equipment, and labor relations and history. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises.
Credit Recommendation:	In the vocational certificate or lower division baccalaureate/associate degree category, 1 semester hour in Industrial Safety I, 3 semester hours in Basic (AC/DC) Electricity, 1 semester hour in Labor Relations and History I, and 2 semester hours in Electrical Construction Laboratory I for a total of 7 semester hours (8/00).

Version 1

Course Title:	NJATC Apprentice Lineman 1st Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	160 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience; 200 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience
Version Dates:	11/01/1984 - 07/31/2000
Objective:	First year of a three year program of study and field experience for Journeyman Lineman status in the electrical construction (outside) industry.
Learning Outcome:	Upon successful completion of this course, the student will be able to apply the principles of technical mathematics, basic electricity, electrical safety, and first aid; perform outside electrical construction activities under supervision; and meet OSHA safety and CPR certification requirements.
Instruction:	Major topics covered in the course are technical mathematics, basic AC/DC electricity, electrical safety, OSHA safety program, CPR, and field experience in electrical construction with heavy equipment. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises.
Credit Recommendation:	In the lower division baccalaureate/associate degree category, 3 semester hours in Technical Math, 2 semester hours in Industrial Safety and First Aid, 3 semester hours in Basic (AC/DC) Electricity, and 2 semester hours in Electrical Construction Laboratory for a total of 10 semester hours (12/94).

NJATC Apprentice Lineman 2nd Year Course

ACE Number:	NJAT-0007
Credit Type:	Course

Version 2

Course Title:	NJATC Apprentice Lineman 2nd Year Course
Location:	National Joint Apprenticeship and Training Committee for the Electrical Industry
Length:	200 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience
Version Dates:	08/01/2000 - Present
Learning Outcome:	Upon successful completion of this course, the student will be able to apply the principles of AC electrical circuitry to the use of transformers in single phase and three phase circuits; read power/electrical schematics and construction plans; follow high voltage safety procedures; perform high voltage installation of electrical components; and understand the principles of labor relations and history.
Instruction:	Major topics covered in the course are AC circuits including inductance, three phase connections, polarity, and distribution circuits; electrical schematics and site plan drawing reading; high voltage safety; high voltage installation procedures, and labor relations and history and industrial safety. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises.

Credit Recommendation: In the vocational certificate or lower division baccalaureate/associate degree category, 1 semester hour in Industrial Safety II, 3 semester hours in Basic (AC/DC) Electricity, 2 semester hours in Electrical Construction Laboratory II, and 1 semester hour in Labor Relations and History II for a total of 7 semester hours (8/00).

Version 1

Course Title: NJATC Apprentice Lineman 2nd Year Course
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 160 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience
Version Dates: 11/01/1984 - 07/31/2000
Learning Outcome: Upon successful completion of this course, the student will be able to apply the principles of AC electrical circuitry to the use of transformers in single phase and three phase circuits; read power/electrical schematics and construction plans; follow high voltage safety procedures; and perform high voltage installation of electrical components.
Instruction: Major topics covered in the course are AC circuits, including inductance, three phase connections, polarity, and distribution circuits; electrical schematics and site plan drawing reading; high voltage safety; and high voltage installation procedures. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 3 semester hours in AC Circuits, 2 semester hours in High Voltage Circuits Laboratory, 2 semester hours in Industrial High Voltage Safety, 2 semester hours in Construction/Electrical Reading, and 2 semester hours in Technical Math for a total of 11 semester hours (12/94).

NJATC Apprentice Lineman 3rd Year Course

ACE Number: NJAT-0008
Credit Type: Course

Version 2

Course Title: NJATC Apprentice Lineman 3rd Year Course
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 160 hours (9 months) classroom and 3,000 hours (11/2 years) field cooperative experience
Version Dates: 08/01/2000 - Present
Objective: Third year of a three year program of study and field experience for Journeyman Lineman status in the electrical construction (outside) industry.
Learning Outcome: Upon successful completion of this course, the student will be able to apply AC circuit theory toward use in power AC installations; use metering to troubleshoot power electrical circuits; exhibit knowledge of power switching circuits; understand residential circuits; perform live wire maintenance; and understand the principles of labor relations and history and industrial safety.
Instruction: Major topics covered in the course are advanced transformer connections, high voltage testing, fault currents, live line maintenance, cable splicing, oil circuit breakers, circuit metering, watt-hour meter use, fusing, substations, and labor relations and history and industrial safety. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises.
Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in Power Electrical Measurements Methods, 3 semester hours in Electrical Troubleshooting (Power) Theory; 2 semester hours in Electrical Troubleshooting (Power) Laboratory, 2 semester hours in AC Circuits (Power) Laboratory, and 1 semester hour in Labor Studies/History III for a total of 10 semester hours (8/00).

Version 1

Course Title: NJATC Apprentice Lineman 3rd Year Course
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 160 hours (9 months) classroom and 2,000 hours (1 year) field cooperative experience
Version Dates: 11/01/1984 - 07/31/2000

- Learning Outcome:** Upon successful completion of this course, the student will be able to apply AC circuit theory toward use in power AC installations; use metering to troubleshoot power electrical circuits; exhibit knowledge of power switching circuits; understand residential circuits; and perform live wire maintenance.
- Instruction:** Major topics covered in the course are advanced transformer connections, high voltage testing, fault currents, live line maintenance, cable splicing, oil circuit breakers, circuit metering, watt-hour meter use, fusing, and substations. Methods of instruction include lecture, discussion, audio/visual materials, and classroom and laboratory exercises.
- Credit Recommendation:** In the lower division baccalaureate/associate degree category, 2 semester hours in Power Electrical Measurements Methods, 3 semester hours in Electrical Troubleshooting (Power) Theory; 2 semester hours in Electrical Troubleshooting (Power) Laboratory, and 2 semester hours in AC Circuits (Power) Laboratory for a total of 9 semester hours (12/94).

NJATC Apprentice Residential Wireman 1st Year Course

- ACE Number:** NJAT-0012
- Credit Type:** Course

Version 1

- Course Title:** NJATC Apprentice Residential Wireman 1st Year Course
- Location:** National Joint Apprenticeship and Training Committee for the Electrical Industry
- Length:** 180 hours (9 months) classroom and 1,600 hours (1 year) field cooperative experience
- Version Dates:** 04/01/1998 - Present
- Objective:** First year of a three-year program of study and field experience for Journeyman Residential Wireman status in the electrical construction (residential) industry.
- Learning Outcome:** Upon successful completion of this course, the student will be able to demonstrate knowledge, skills, and abilities to apply the principles of basic electricity; apply principle and practices of health and safety; read engineering drawings; layout circuits; and complete all NJATC examinations (written, demonstration, and competency) with a passing grade.
- Instruction:** Major topics covered in the course are DC electricity, National Electrical Code, labor relations and history, health and safety, reading engineering drawings, units and measurements, the use of electrical construction tools, electrical construction materials and methods, and residential electrical construction field experience. Methods of instruction include lecture, discussion, live demonstrations, and audio/visual and field cooperative training.
- Credit Recommendation:** In the lower division baccalaureate/associate degree category, 2 semester hours in DC Circuits and Laboratory; 1 semester hour in National Electrical Code I; 1 semester hour in Blueprint Reading; 1 semester hour in Labor Relations and History I; 1 semester hour in Industrial Safety I; and 1 semester hour in Electrical Construction Field Experience I, for a total of 7 semester hours. In the vocational certificate category, 2 semester hours in Residential Wiring I (8/00).

NJATC Apprentice Residential Wireman 2nd Year Course

- ACE Number:** NJAT-0013
- Credit Type:** Course

Version 1

- Course Title:** NJATC Apprentice Residential Wireman 2nd Year Course
- Location:** National Joint Apprenticeship and Training Committee for the Electrical Industry
- Length:** 180 hours (9 months) classroom and 1,600 hours (1 year) field cooperative experience
- Version Dates:** 04/01/1998 - Present
- Objective:** Second year of a three-year program of study and field experience for Journeyman Residential Wireman status in the electrical construction (residential) industry.
- Learning Outcome:** Upon successful completion of this course, the student will be able to apply the principles of basic DC and AC electricity; apply principles and practices of health and safety; read engineering drawings; apply residential circuit load calculations; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are AC theory, transformer connections, circuit and conductor load and sizing calculations, fault currents, National Electrical Code, labor relations and history, health and safety, residential circuit and service installations, residential motor, and heating and air conditioning circuits and systems. Methods of instruction include lecture, discussion, audio/visual materials, demonstration, and classroom and laboratory exercises.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in National Electrical Code II, 2 semester hours in AC Circuits and Laboratory, 1 semester hour in Labor Relations and History II, 1 semester hour in Industrial Safety II, and 1 semester hour in Electrical Construction Field Experience II, for a total of 6 semester hours. In the vocational certificate category, 2 semester hours in Residential Wiring II, for a total of 2 semester hours in the vocational certificate category (8/00).

NJATC Apprentice Residential Wireman 3rd Year Course

ACE Number: NJAT-0014

Credit Type: Course

Version 1

Course Title: NJATC Apprentice Residential Wireman 3rd Year Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 180 hours (9 months) classroom and 1,600 hours (1 year) field cooperative experience

Version Dates: 04/01/1998 - Present

Objective: Third year of a three-year program of study and field experience for Journeyman Residential Wireman status in the electrical construction (residential) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to calculate single-family residential and multifamily residential loads; install residential telephone and sound distribution circuits and systems; install motors and other components for residential heating and air conditioning systems; install home automation devices; apply principles and practices of health and safety; install basic security systems; install photo-voltaic power sources; install and maintain residential fire alarm systems; install residential computer network systems; and complete all NJATC examinations (written, demonstration, and field competency) with a passing grade.

Instruction: Major topics covered in the course are advanced AC circuits; power quality and power factor; residential electrical loads; residential low voltage systems including telephone, sound distribution, energy management, home automation, security systems and fire alarm systems, and residential computer networks; alternate power sources such as solarphoto-voltaics; National Electrical Code; labor relations and history; and health and safety. Methods of instruction include lecture, discussion, audio/visual materials, demonstration, and classroom and laboratory exercises.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in National Electrical Code III, 1 semester hour in Labor Relations and History III, 1 semester hour in Industrial Safety III, and 1 semester hour in Electrical Construction Field Experience III, for a total of 4 semester hours. In the vocational certificate category, 2 semester hours in Residential Wiring Layout, and 2 semester hours in Residential Wiring Power and Controls, for a total of 4 semester hours (8/00).

NJATC Code and Practices-3

ACE Number: NJAT-0016

Credit Type: Course

Version 1

Course Title: NJATC Code and Practices-3

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 40 hours classroom.

Version Dates: 08/01/2005 - Present

Objective: Enhanced third year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subject of overcurrent protection and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to ability of the student to properly select overcurrent protection devices as appropriate to provide coordinated overcurrent protection providing safe electrical distribution systems through field installation processes.

Instruction: Major topics covered in the course are types of overload protection devices, specific installation parameters of specific overcurrent protection devices, proper selection and coordination of overcurrent protection devices as required for various installation parameters. Other topics covered include ground fault protection, the relationship of the National Electric Code (NEC) to overcurrent protections devices and related wiring and grounding schemes associated with power distribution systems as they relate to overcurrent.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in Electrical Circuit Fault Analysis (12/05).

NJATC Digital Electronics

ACE Number: NJAT-0017

Credit Type: Course

Version 1

Course Title: NJATC Digital Electronics

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 60 hours classroom.

Version Dates: 08/01/2005 - Present

Objective: Enhanced fourth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subject of digital electronics and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to students application of digital electronic theory relative to programmable logic controller applications, motor control applications as well as topics applicable to stand-alone digital theory.

Instruction: Major topics covered in the course are digital component theory, gates, digital displays, numbering systems, clock circuits, counters, flip-flops, comparators and an introduction to several IC devices. Also covered are application practices for these various devices approached through formal labs using digital electronics trainer equipment.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in Combinational & Sequential Digital Electronics and 1 semester hour in Digital Electronics Laboratory (12/05).

NJATC Distributed Generation

ACE Number: NJAT-0018

Credit Type: Course

Version 1

Course Title: NJATC Distributed Generation

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 20 hours classroom.

Version Dates: 08/01/2005 - Present

Objective: Enhanced fifth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside) industry.

- Learning Outcome:** Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subject of uninterruptible power supplies, solar photovoltaic systems and fuel cells and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to field installation practices associated with the various types of distributed generation equipment included as topics.
- Instruction:** Major topics covered in the course are UPS technology and critical load overview, UPS design and load configuration, UPS installation practices, solar photovoltaic system installation practices and fuel cell theory basics, practices and installations. Included are related codes and applicable standards as required for topic development.
- Credit Recommendation:** In the lower division baccalaureate/associate degree category, 1 semester hour in Industrial Electronics I (12/05).

NJATC Fire Alarm

- ACE Number:** NJAT-0019
Credit Type: Course

Version 1

- Course Title:** NJATC Fire Alarm
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 25 hours classroom.
Version Dates: 08/01/2005 - Present
Objective: Enhanced fifth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside and voice-data-video) industry. Also, preparation for NICET Fire Alarm System Certification, Levels 1 and 2 test preparation.
- Learning Outcome:** Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to fire alarm system installation practices and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to ability of the student to select and install the various components associated with fire alarm systems and to understand the applicable installation standards and related codes as they relate to the installations of these systems.
- Instruction:** Major topics covered in the course are fire alarm system history and fundamentals, initiating and notification devices, associated wiring methods, system inspection, testing and maintenance parameters, applicable codes and standards, emergency voice evacuation systems, advanced system installation and detection methods and an overview of residential and household fire alarm systems.
- Credit Recommendation:** In the lower division baccalaureate/associate degree category, 1 semester hour in Fire Alarm System Installation and Inspection (12/05).

NJATC Instrumentation

- ACE Number:** NJAT-0020
Credit Type: Course

Version 1

- Course Title:** NJATC Instrumentation
Location: National Joint Apprenticeship and Training Committee for the Electrical Industry
Length: 100 hours classroom
Version Dates: 08/01/2005 - Present
Objective: Enhanced fifth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade/continuing education in the electrical construction (inside) industry.
- Learning Outcome:** Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subject of instrumentation and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to ability of the student to master the concepts related to process control field instrumentation including blueprint reading, calibration concepts and topics related to process control.

Instruction: Major topics covered in the course are instrumentation fundamentals, drawing symbols, calibration fundamentals and procedures, the physical properties associated with the measurement of flow, level, pressure and temperature, process control concepts, smart instrumentation communication and calibration, field instrumentation installation parameters, final control element installation and safety topics related to the instrumentation field.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 3 semester hours in Instrumentation Fundamentals and 1 semester hour in Process Control Concepts (12/05).

NJATC Motors

ACE Number: NJAT-0021

Credit Type: Course

Version 1

Course Title: NJATC Motors

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 44 hours classroom.

Version Dates: 08/01/2005 - Present

Objective: Enhanced fourth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subject of motors and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to motor theory and application, detailing the various types of motors and their specific use and applications.

Instruction: Major topics covered in the course are magnetism theory as it applies to motors, Polyphase motors, wound-rotor and synchronous motors, single-phase motors, DC motors, motor breaking and starting, variable speed motor control, clutches, motor troubleshooting, rotating phase converters, and drive devices such as pulleys and couplings.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 3 semester hours in DC and AC Motors (12/05).

NJATC Structured Cabling

ACE Number: NJAT-0022

Credit Type: Course

Version 1

Course Title: NJATC Structured Cabling

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 40 hours classroom.

Version Dates: 08/01/2005 - Present

Objective: Enhanced fifth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside and voice-data-video) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subjects of structured copper wire and fiber optic cabling systems and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to ability of the student to properly install, terminate and test communication systems utilizing these technologies.

Instruction: Major topics covered in the course are an overview of premises cabling systems, applicable codes and standards covering installations and safety, a structured cabling system overview, cabling performance, the various types of cabling types, pathways and spaces, cable system administration, grounding and bonding, system configuration and application, residential cabling systems, cabling system certification and testing, fiber optic overview, fiber transmitters and receivers, connectorization, installation and fiber optic system certification.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 2 semester hours in Network Cabling Systems (12/05).

NJATC Tech Math Course

ACE Number: NJAT-0015

Credit Type: Course

Version 1

Course Title: NJATC Tech Math Course

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 40 hours

Version Dates: 08/01/1996 - Present

Objective: To present the mathematical concepts necessary to prepare individuals to perform calculations and conversions to successfully complete the electrical inside, outside, residential, or installer/technician apprenticeship programs.

Learning Outcome: Upon successful completion of this course, the student will be able to apply mathematical procedures to solve formulas; and perform conversions used in the electrical construction industry.

Instruction: Major topics covered in the course are addition, subtraction, multiplication and divisions of whole numbers, signed numbers, fractions and decimal conversions, powers and roots, units and measurements, algebraic concepts, solving equations, simultaneous equations, ratio and proportion, percentages, geometry, trigonometry fundamentals, vectors, binary, octal and hexadecimal number systems, and Boolean algebra fundamentals. Methods of instruction include lecture, discussion, classroom exercises, audio/visual material, computer-assisted instruction, quizzes, observations, tests, and final examination.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 3 semester hours in Technical Mathematics or Industrial Mathematics (12/05).

NJATC Telephone & Security Bas

ACE Number: NJAT-0023

Credit Type: Course

Version 1

Course Title: NJATC Telephone & Security Bas

Location: National Joint Apprenticeship and Training Committee for the Electrical Industry

Length: 40 hours classroom.

Version Dates: 08/01/2005 - Present

Objective: Enhanced fifth year apprentice development for Journeyman Inside Wireman status or Journeyman Training skills upgrade / continuing education in the electrical construction (inside and voice-data-video) industry.

Learning Outcome: Upon successful completion of this course, the student will be able to demonstrate mastery of knowledge and skills relative to the subject of telephone and security systems and complete all NJATC examinations (written) with a passing grade. These knowledge and skill sets directly relate to ability of the student to properly install, terminate and test telephone and security systems utilizing these technologies.

Instruction: Major topics covered in the course are a security system overview, security system magnetic contact installations, passive infrared motion detectors, and glass-break sensors. Also included are a telephone system overview, telephone system circuitry, telephone system wiring methods and an analog vs. digital phone system comparison.

Credit Recommendation: In the lower division baccalaureate/associate degree category, 1 semester hour in Security System Installation and Telephone Monitoring Systems (12/05).

