



International Union of Operating Engineers

AFFILIATED WITH THE AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

Stationary (NTF) Training Course Schedule

Courses from November 1, 2024 - December 31, 2025

Course - Session	Date(s)
HVAC Systems 2	Mar 10, 2025 - Mar 14, 2025
Generator Maintenance & Operation	May 13, 2025 - May 16, 2025
OSHA 510 Safety & Health Standards for the Construction Industry	May 13, 2025 - May 16, 2025
OSHA 500 Trainer Course Construction Industry	May 17, 2025 - May 20, 2025
Blueprint Reading for Stationary Engineers	May 18, 2025 - May 22, 2025
Automatic Transfer Switch (ATS) for Generators	Jun 2, 2025 - Jun 4, 2025
Electrical Systems 1	Jun 3, 2025 - Jun 7, 2025
OSHA 511 Occupational Safety and Health Standards for General Industry	Jun 3, 2025 - Jun 6, 2025
Solar Panel Installation Maintenance & Troubleshooting	Jun 6, 2025 - Jun 9, 2025
OSHA 501 Safety & Health Standards for General Industry	Jun 7, 2025 - Jun 10, 2025
Pump Maintenance & Operation	Jun 10, 2025 - Jun 13, 2025
Certified Pool Operator	Jun 10, 2025 - Jun 12, 2025
Testing & Balancing for Air & Hydronic Systems	Jun 11, 2025 - Jun 15, 2025
HVAC Systems 1	Jun 16, 2025 - Jun 20, 2025
Low Pressure Boiler Operations	Jun 16, 2025 - Jun 20, 2025
Electrical Troubleshooting & Variable Frequency Drive Operations	Jun 19, 2025 - Jun 22, 2025
Chiller Efficiency	Jun 19, 2025 - Jun 21, 2025
Blueprint Reading II for Stationary Engineers	Jun 22, 2025 - Jun 26, 2025

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Electrical Systems 2	Jun 23, 2025 - Jun 27, 2025
Welding	Jun 23, 2025 - Jun 27, 2025
Basic Controls and Building Automation Systems	Jun 28, 2025 - Jun 30, 2025
Electrical Troubleshooting & Variable Frequency Drive Operations	Jul 1, 2025 - Jul 4, 2025
Automated Lighting Controls by Lutron Electronics	Jul 7, 2025 - Jul 8, 2025
OSHA 503 Update for General Industry Outreach Trainers	Jul 7, 2025 - Jul 9, 2025
Electrical Systems 1	Jul 9, 2025 - Jul 13, 2025
OSHA 502 Update for Construction	Jul 10, 2025 - Jul 12, 2025
Pump Maintenance & Operation	Jul 14, 2025 - Jul 17, 2025
HVAC Systems 2	Jul 14, 2025 - Jul 18, 2025
Data Center Operations	Jul 14, 2025 - Jul 18, 2025
OSHA 521 Industrial Hygiene	Jul 14, 2025 - Jul 18, 2025
Boiler Operations 1	Jul 17, 2025 - Jul 21, 2025
NATE Test Prep	Jul 20, 2025 - Jul 22, 2025
Electrical Systems 2	Jul 21, 2025 - Jul 25, 2025
Basic Controls and Building Automation Systems	Jul 26, 2025 - Jul 28, 2025
Energy Conservation	Jul 26, 2025 - Jul 29, 2025
Electrical Troubleshooting & Variable Frequency Drive Operations	Aug 1, 2025 - Aug 4, 2025
Chiller Efficiency	Aug 2, 2025 - Aug 4, 2025
Advanced Controls & Building Automation Systems	Aug 2, 2025 - Aug 4, 2025
Data Center Operations	Aug 5, 2025 - Aug 9, 2025

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Stationary (NTF) Training Course Schedule

Stationary Training Conference	Aug 5, 2025 - Aug 6, 2025
High Pressure Boiler Operations	Aug 6, 2025 - Aug 10, 2025
Electrical Systems 2	Aug 11, 2025 - Aug 15, 2025
Pump Maintenance & Operation	Aug 11, 2025 - Aug 14, 2025
Welding	Aug 11, 2025 - Aug 15, 2025
Rooftop Unit Maintenance & HVAC Troubleshooting	Aug 17, 2025 - Aug 20, 2025
Solar Panel Installation Maintenance & Troubleshooting	Aug 19, 2025 - Aug 22, 2025
Chief Engineer Course	Aug 22, 2025 - Aug 26, 2025
Electrical Systems 1	Aug 25, 2025 - Aug 29, 2025
Basic Controls and Building Automation Systems	Sep 5, 2025 - Sep 7, 2025
Low Pressure Boiler Operations	Sep 6, 2025 - Sep 10, 2025
Electrical Systems 1	Sep 8, 2025 - Sep 12, 2025
OSHA 510 Safety & Health Standards for the Construction Industry	Sep 9, 2025 - Sep 12, 2025
Blueprint Reading for Stationary Engineers	Sep 11, 2025 - Sep 15, 2025
OSHA 500 Trainer Course Construction Industry	Sep 13, 2025 - Sep 16, 2025
Data Center Operations	Sep 15, 2025 - Sep 19, 2025
Solar Panel Installation Maintenance & Troubleshooting	Sep 18, 2025 - Sep 21, 2025
Basic Controls and Building Automation Systems	Sep 20, 2025 - Sep 22, 2025
Pump Maintenance & Operation	Sep 22, 2025 - Sep 25, 2025
Teaching Techniques I	Sep 22, 2025 - Sep 26, 2025
Certified Pool Operator	Sep 23, 2025 - Sep 25, 2025

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Stationary (NTF) Training Course Schedule

Pump Maintenance & Operation	Sep 26, 2025 - Sep 29, 2025
Programmable Logic Controller (PLC)	Sep 26, 2025 - Sep 28, 2025
Electrical Systems 1	Sep 29, 2025 - Oct 3, 2025
Facility Water Chemistry & Treatment	Oct 1, 2025 - Oct 3, 2025
Electrical Troubleshooting & Variable Frequency Drive Operations	Oct 3, 2025 - Oct 6, 2025
Basic Controls and Building Automation Systems	Oct 4, 2025 - Oct 6, 2025
Chief Engineer Course	Oct 6, 2025 - Oct 10, 2025
OSHA 502 Update for Construction	Oct 7, 2025 - Oct 9, 2025
Cooling Tower Operation & Maintenance	Oct 9, 2025 - Oct 10, 2025
Advanced Controls & Building Automation Systems	Oct 11, 2025 - Oct 13, 2025
Pump Maintenance & Operation	Oct 13, 2025 - Oct 16, 2025
Testing & Balancing for Air & Hydronic Systems	Oct 13, 2025 - Oct 17, 2025
HVAC Systems 1	Oct 15, 2025 - Oct 19, 2025
Thermography, Vibration & Emerging Applications from Fluke	Oct 15, 2025 - Oct 16, 2025
Solar Panel Installation Maintenance & Troubleshooting	Oct 17, 2025 - Oct 20, 2025
Teaching Techniques II	Oct 19, 2025 - Oct 24, 2025
Electrical Systems 2	Oct 20, 2025 - Oct 24, 2025
OSHA 3015 Excavation, Trenching and Soil Mechanics	Oct 20, 2025 - Oct 24, 2025
Blueprint Reading II for Stationary Engineers	Oct 21, 2025 - Oct 25, 2025
Automated Lighting Controls by Lutron Electronics	Oct 27, 2025 - Oct 28, 2025

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OSHA 510 Safety & Health Standards for the Construction Industry	Oct 28, 2025 - Oct 31, 2025
OSHA 500 Trainer Course Construction Industry	Nov 1, 2025 - Nov 4, 2025
Data Center Operations	Nov 3, 2025 - Nov 7, 2025
Programmable Logic Controller (PLC)	Nov 7, 2025 - Nov 9, 2025
Pump Maintenance & Operation	Nov 10, 2025 - Nov 13, 2025
40-Hour HAZWOPER	Nov 10, 2025 - Nov 14, 2025
Data Center Operations	Nov 10, 2025 - Nov 14, 2025
HVAC Systems 2	Nov 13, 2025 - Nov 17, 2025
Solar Panel Installation Maintenance & Troubleshooting	Nov 14, 2025 - Nov 17, 2025
Electrical Systems 1	Nov 17, 2025 - Nov 21, 2025
HAZWOPER Train-the-Trainer	Dec 2, 2025 - Dec 9, 2025
Rooftop Unit Maintenance & HVAC Troubleshooting	Dec 6, 2025 - Dec 9, 2025
Basic Controls and Building Automation Systems	Dec 6, 2025 - Dec 8, 2025
Automatic Transfer Switch (ATS) for Generators	Dec 13, 2025 - Dec 15, 2025
Advanced Controls & Building Automation Systems	Dec 13, 2025 - Dec 15, 2025
Generator Maintenance & Operation	Dec 16, 2025 - Dec 19, 2025

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Stationary (NTF) Training Course Schedule

Training Course Descriptions

HVAC SYSTEMS 2

HVAC Systems 2 builds upon the students fundamental knowledge of heating, ventilation and air conditioning principles to teach the safe and efficient operation of systems found in facilities.

Students completing the class will gain the following:

- Understanding of the operation of chillers, heat exchangers, pumps, fans and other system equipment.
- Understanding of the interaction between the different components in a system
- Understanding of HVAC control systems.
- Ability to perform basic HVAC system troubleshooting.
- Ability to safely handle refrigerants.
- Participate in practical hands on exercises to reinforce learning outcomes.
- Ability to pass a basic HVAC competency exam.
- Opportunity to take the EPA 608 exams.

Students taking HVAC Systems 2 should have previously taken HVAC Systems 1, or have knowledge of system components and core HVAC principles.

GENERATOR MAINTENANCE & OPERATION

This class is intended for Apprentice through Mid-level journeyman. It covers for both “theory and practical” knowledge on diesel generator operation.

The seminar will have three primary categories:

- 1) Diesel generator maintenance and operation
- 2) Safety with emphasis on OSHA standards, Title 29 1910 & 1926 Code of Federal Regulations
- 3) Basic electrical knowledge as per National Electrical Code guidelines Students will have hands on time with a diesel generator package.



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Stationary (NTF) Training Course Schedule

OSHA 510 SAFETY & HEALTH STANDARDS FOR THE CONSTRUCTION INDUSTRY

OPEN TO IUOE INSTRUCTORS ONLY

This course covers OSHA policies, procedures, and standards, as well as construction safety and health principles. Topics include scope and application of the OSHA construction standards. Special emphasis is placed on those areas that are the most hazardous, using OSHA standards as a guide. Completion of this class is required prior to taking the OSHA 500 class.

OSHA 500 TRAINER COURSE CONSTRUCTION INDUSTRY

OPEN TO IUOE INSTRUCTORS ONLY

AUTHORIZES INSTRUCTOR TO TEACH: 10- and 30-Hour Construction Industry Outreach courses.

BLUEPRINT READING FOR STATIONARY ENGINEERS

Students will be exposed to various subjects related to blueprint reading, such as blueprints, construction materials, construction methods, specifications, branding, and quantity takeoff. Students will spend approximately 70% of classroom time with hands-on labs utilizing a variety of the prints and specifications that are most often used as reference and guidance for the Stationary Engineer. Specific emphasis on owner branding, electrical, HVAC, and plumbing prints, and their use in the industry.

AUTOMATIC TRANSFER SWITCH (ATS) FOR GENERATORS

The focus of this course is on Automatic Transfer Switches & Emergency Standby Generator and how they may be applied in a variety of settings and industrial sectors. Standby generators are used primarily to provide backup power if utility power from the utility electrical distribution system is lost.



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Stationary (NTF) Training Course Schedule

This course will discuss the operation of Automatic Transfer Switches & Generators, their application, how they are integrated into the overall electrical system, auxiliary supporting equipment and generator package maintenance. This course will cover many practical examples and will be interactive for students to gain a broad overall understanding of standby generators.

At the completion of this course, students will be able to perform startup, commissioning and maintenance activities on automatic transfer switches and controllers related to generators. Students will learn about the transfer switch equipment that is currently being used in today's industry. Hands-on activity will comprise at least half of the time spent in training activities.

ELECTRICAL SYSTEMS 1

Electricity is a fundamental part of most tasks that the stationary engineer performs. Whether one works with motors, chillers, boilers, air handlers, lighting, or controls, electricity plays a part of each. This course equips the stationary engineer with knowledge of electrical principals, electrical safety, how to perform electrical calculations, and gives an understanding of both AC and DC electrical components. Students have the opportunity to also perform hands on activities to reinforce the coursework.

This course is a suggested pre-requisite for Electrical Systems 2 course.

OSHA 511 OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR GENERAL INDUSTRY OPEN TO IUOE INSTRUCTORS ONLY

This course covers OSHA Standards, policies, and procedures in general industry. Topics include scope and application of the OSHA General Industry Standards, general industry principles and special emphasis on those areas in general industry which are most hazardous.

Completion of this class is required prior to taking the OSHA 501 class.



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Stationary (NTF) Training Course Schedule

SOLAR PANEL INSTALLATION MAINTENANCE & TROUBLESHOOTING

This course work will include information on site location, system sizing, mounting options, system components, configurations, mechanical, electrical integration and code requirements. Topics also include Solar Radiation, System Components, Cells, Modules, and Arrays, Batteries, Inverters, System Sizing, Mechanical Integration, Electrical Integration, Utility Interconnection, Permitting and Inspection, Commissioning, Maintenance, and Troubleshooting. Students will receive hands on training in installation and configuration of actual solar voltaic systems.

OSHA 501 SAFETY & HEALTH STANDARDS FOR GENERAL INDUSTRY

OPEN TO IUOE INSTRUCTORS ONLY

AUTHORIZES INSTRUCTOR TO TEACH: 10- and 30-Hour General Industry Outreach courses.

PUMP MAINTENANCE & OPERATION

Successful and efficient operations and maintenance of any mechanical system can only be accomplished with a clear understanding of the components making up the mechanical system and how they interact. Stationary engineers are responsible for the operations and maintenance of the Chilled Water, Condenser Water and Hot Water systems to just name a few. The heart of each of these is the pump.

In this four-day course students will become familiar with different types of pumps, their operating principles, how to diagnose and troubleshoot issues, and their proper maintenance and repair procedures. Focus is on hands on activities.

CERTIFIED POOL OPERATOR

This course will prepare the student for the Pool & Hot Tub Alliance (PHTA) (formerly National Swimming Pool Foundation (NSPF) certified pool operator exam. The test will be administered by an authorized PHTA instructor on the last day of the course. The certification is valid for five years from date of course completion. There is a cost to the student of \$45.00 for the certification.



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Stationary (NTF) Training Course Schedule

TESTING & BALANCING FOR AIR & HYDRONIC SYSTEMS

HVAC system efficiency and human comfort are all affected by proper system airflow requirements. Testing, Adjusting, and Balancing (TAB) of an HVAC system is a useful process of measuring and regulating the amount of airflow at each area of the building. Balancing is essential for any HVAC system to perform as per building design and expectations. It is an overall health check for your HVAC system and helps to ensure that you are providing the building occupants with a comfortably conditioned space at the lowest energy cost possible.

A well-balanced system will ensure the right amounts of air are delivered to the right places, at the right temperature, and humidity levels with the least amount of distribution losses. It is important that the air distribution system and duct designs are designed and installed in such a way that the balancing and the measuring of airflow are possible and can be performed accurately.

This course will discuss why balancing an HVAC system is so important, why systems become unbalanced, what the balancing process entails and more. This course will help the student understand the TAB process and interpret the ventilation/balance report information and the process for conducting total system balancing, from start to finish, for basic air systems, hydronic systems, and domestic hot water systems found in commercial buildings. Course topics include document review & preparation for TAB (of air & water systems), site observations, testing for constant & variable air & water system flow rates.

HVAC SYSTEMS 1

Heating Ventilation Air Conditioning and Refrigeration are core topics for Stationary Engineers.

This course is designed to give students an solid understanding of HVACR. After taking this class students will have:

- Knowledge of fundamental refrigeration principles.
- Knowledge of fundamental HVAC principles.
- Knowledge of HVAC system components.
- Knowledge of HVAC control systems.
- Understand air comfort and quality.
- Ability to solder and braze connections for piping systems.

This course includes hands on training with state of the art tools and equipment.

LOW PRESSURE BOILER OPERATIONS

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Low Pressure Boiler Operations course will help to assist in preparing the Stationary Engineer for the proper operation of Low-Pressure boilers and will also help with preparing for the facility operating engineer licensing. This course provides a comprehensive overview of the latest information on the safe and efficient operation of low-pressure steam and hot water boilers, cooling systems, and related equipment. The course is divided into sections to aid comprehension of key concepts:

- Boiler Operation Principles
- Steam Boiler Fittings
- Steam Boiler Feedwater Systems
- Steam Systems
- Fuel Systems
- Draft Systems
- Boiler Water Treatment
- Boiler Operation Procedures
- Hot Water Boilers and Fittings
- Hot Water Boiler Accessories and Piping Systems
- Cooling Systems
- Boiler Operation Safety
- Boiler Operator Licensing

ELECTRICAL TROUBLESHOOTING & VARIABLE FREQUENCY DRIVE OPERATIONS

This four-day seminar is designed to provide the knowledge and skills required when selecting, installing, testing and troubleshooting electrical systems the motors they control, and the control circuits connected to them. In this hands-on seminar, students will build, program and test VFD, motors and control circuits.

Test instruments covered and used include digital multi-meters (DMMs), current clamps and meter attachments. Topics, circuits, and equipment covered include:

- Test instrument terminology, symbols and measurement functions for each type of instrument used is covered to learn what test instruments should and should not be used circuits.
- Learn the safe and correct way to take electrical measurements and what the measurements actually mean.

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Stationary (NTF) Training Course Schedule

- Learn where and how to use special meter functions like MIN/MAX, RELATIVE, LoZ, Peak, kVA, kW, and PF measurement functions.
- Learn how to test for grounding problems.
- Understanding VFD and motor nameplate data.
- Learn how to test and wire any three-phase motor without using the motors wiring diagram and what the expected readings should be before power is applied and how to troubleshoot the motor after power is applied.
- Circuits built include using, magnetic motor starters, mechanical and solid-state switches, such as, selector switches, proximity switches, photoelectric switches, analog inputs (photovoltaic and potentiometers), and other commonly used electrical devices.
- Connect, program, and test VFDs (variable frequency drives).
- Take power measurements (P.F., kVA, kW, and harmonic) to understand power quality problems.

CHILLER EFFICIENCY

Chillers can be one of the largest energy users in a facility. This seminar provides an overview of the fundamentals of several types of chillers and how they function. It also reviews the controls of popular chiller interfaces and what to look for when monitoring them to help ensure they are running at their peak efficiency. Students have the opportunity to work with one of the three chillers in the training center which include Carrier, Trane, and York chillers.

BLUEPRINT READING II FOR STATIONARY ENGINEERS

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Prerequisite: Students should have taken Blueprint Reading for Stationary Engineers or have similar work experience and blueprint knowledge.

Printreading for Heavy Commercial Construction covers information on construction materials and methods, building process participants, project delivery methods, LEED® green building requirements, and the CSI MasterFormat®. Expanded topics in this class include project owner types, surveying, underground utility location, slip forms, building automation, interior trim, and new Energy Center prints.

Students will be also be exposed to various subjects related to MEP drawings on as large Commercial building specifications, Students will spend approximately 70% of classroom time with hands-on labs utilizing a variety of the drawings and specifications that are most often used as reference and guidance for the Stationary Engineer. Specific emphasis on owner branding, electrical, HVAC, and plumbing drawings and their use in the industry.

ELECTRICAL SYSTEMS 2

This class builds off of Electrical Systems 1 so students should have taken that before this class or have comparable experience and understanding.

In this class, students will be provided a greater understanding of electrical principles and theory including series and parallel circuits and more advanced electric formulas. Students will gain the ability to read electrical prints, replace breakers, and perform troubleshooting using Fluke meters. This course includes substantial hands-on activities.

WELDING

Courses will teach the student how to weld in all positions using different welding processes.

BASIC CONTROLS AND BUILDING AUTOMATION SYSTEMS



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BASIC CONTROLS& BUILDING AUTOMATION SYSTEMS

This course has been developed for individuals who want to take the mystery out of the understanding of how DDC controls and Building Automation Systems operate, and also the insight of the various related software packages that drive these systems and how they manipulate these systems.

This seminar has also been designed for people not familiar DDC controls and Building Automation Systems. There will be lectures on basic control strategies, the basics of DDC hardware, and also the basic understanding of building optimization for curtailing the use of energy.

For the experienced people there will be discussions on advanced control technologies dealing with the architecture of Building Automation Systems, discussing how they are installed, wired, and then programmed. Also, there will be main topic lectures on DDC Main Controllers, Stand alone controllers, and there communication protocols.

After the completion of this seminar the participants will be able to:

- Understand the basic DDC and Analog control technology for the HVAC field
- Describe the different types of control actions and when to use them
- Identify Building Automation System main components and where they are used
- Define and select the proper Automation System for different locations
- Ascertain how Building Automation Systems Operate to maintain human comfort
- Define the different types of Analog and Binary inputs and outputs
- Understand the system wiring though various schematic diagrams of installed systems
- Comprehend the different type of operator interfaces and how they communicate
- Define criteria for control strategies such as with closed loop control
- Describe control strategies and how buildings are optimized for peak efficiency
- Understand how a PID loop is written and how to tweak it in for the maximum performance
- Define the different types of programming method



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Stationary (NTF) Training Course Schedule

AUTOMATED LIGHTING CONTROLS BY LUTRON ELECTRONICS

For Stationary engineers who wish to gain a better understanding of networked lighting control systems along with how to maintain and troubleshoot them.

Lutron's founder, Joel Spira, invented the first solid state electronic dimmer in 1959. Fast forward to the present day and the world of lighting controls has greatly advanced. In this class you will learn about the most popular commercial Lutron systems installed over the past decade. These products are found in hundreds of thousands of buildings across North America and the world. Commercial lighting systems will often fall under the purview of facilities management so a firm understanding of their maintenance ensures that the lighting system runs as smoothly as the rest of the building.

The duration of this course will be two days. It will act as a knowledge primer for the variety of commercial legacy Lutron systems a stationary engineer may find. We will also introduce the future of Lutron lighting controls and our newest commercial system.

Detailed topics will include:

- Online prerequisite learning plan introducing dimming technology and the Lutron story
- Instructor-led presentations relating to legacy Grafik Eye QS, Energi Savr Node, and panels
- Overview of Lutron's Vive and Quantum systems
- How to control the Quantum Vue Facilities Management software and use it in troubleshooting
- Work on a live Quantum system test wall, program and introduce faults in real-time
- Introduction to Lutron's newest cloud-connected solution, Athena
- Best Practices for Asset Management and Planning
- Update on Fluorescent to LED retrofit kits
- Tour of IUOE's Quantum Lighting Control System and software

OSHA 503 UPDATE FOR GENERAL INDUSTRY OUTREACH

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TRAINERS

OPEN TO IUOE INSTRUCTORS ONLY

RE-AUTHORIZES INSTRUCTOR TO TEACH: 10- and 30-Hour General Industry Outreach courses.

OSHA 502 UPDATE FOR CONSTRUCTION

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RE-AUTHORIZES INSTRUCTOR TO TEACH: 10- and 30-Hour Construction Industry Outreach courses.

DATA CENTER OPERATIONS

Data Center Operation is a core skill for Operating engineers. This course will introduce the student to Data Center equipment found in mission-critical facilities where power supply and environmental control interruption is not acceptable. The program will cover an overview of the Data Center safety guidelines (OSHA 10, NFPA 70e), basic electrical theory and power distribution, switch gear operation, emergency generators, manual & automatic transfer switches, Uninterruptible Power Systems (UPS), battery types and handling procedures, Data Center specific HVAC equipment, chilled water systems, rules governing work in a Data Center, airflow management, fire risk mitigation and suppression, and general techniques used in these facilities. This will also include hands on exercises in our classroom Data Center simulation.

OSHA 521 INDUSTRIAL HYGIENE

OPEN TO IUOE INSTRUCTORS ONLY

AUTHORIZES INSTRUCTOR TO TEACH: Respiratory protection as a standalone course or as part of other courses, such as HAZWOPER.

MAIN TOPICS COVERED: Topics covered include terminology, OSHA Standards, NIOSH certification, respiratory protection programs, and medical evaluation recommendations.

BOILER OPERATIONS 1



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The Boiler Operation 1 course is an introductory course that will provide stationary engineers and maintenance personnel a foundational understanding of boilers, steam and heating. Students will learn how boiler systems work, gain an understanding of boiler safety and learn about various boiler fittings and accessories. Upon completing the class, students will understand basic heat and steam principles, and know how to safely perform an inspection of an operating boiler.

NATE TEST PREP

North American Technician Excellence (NATE) is a non-profit certification organization for HVAC-R technicians. The ITEC is an official NATE Testing Organization.

The NATE Prep is offered at the ITEC is designed for journey level engineers who have knowledge of fundamental electrical, HVAC and refrigeration principles, as well as practical field experience. The 3-Day prep session will review electrical theory, safety, circuits, troubleshooting and formulas. The session will also review HVAC system components, system operations and maintenance, system controls, refrigeration principles and air conditioning troubleshooting. The review will assist students to take the NATE "Core" and "Air Conditioning and Heat Pumps" certification tests. Both tests will be administered during the 3-day session and students must pass both tests to achieve NATE certification. Information about NATE tests and the purchase of study guides can be found at natex.org. (<https://natex.org/>)

It is recommended to have and review both study guides prior to the session.

[Core - NATE \(natex.org\)](https://natex.org/)

[Air Conditioning and Heat Pumps - NATE \(natex.org\)](https://natex.org/)

There is \$140 fee to be paid by the student for each test. (Test pricing subject to change per NATE)

ENERGY CONSERVATION

Prerequisite: Students should have strong working knowledge of Electrical systems, HVAC systems and Building Automation systems.

Members of the International Union of Operating Engineers manage a large amount of the energy that is consumed in North America. Our involvement in this energy management endeavor is critical to its success. This course will explain the various aspects of energy management, metering, regulations, standards, energy auditing, and energy management solutions.

Please see course commercial: iuoentf.training/videos/energy-conservation.mp4

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Stationary (NTF) Training Course Schedule

This is a lecture-based course:

Course Overview:

- [Introduction to Energy Conservation](#)
- [The Energy Star Program and Energy Benchmarking](#)
- [The US Green Building Council and LEED](#)
- [Effective Energy Management](#)
- [Metering and Monitoring](#)
- [Energy Unit Conversions](#)
- [Energy Audits and Assessments](#)
- [Energy Conservation Opportunities](#)
- [Energy Bills](#)
- [Calculating Energy Savings](#)
- [Energy Cost Calculations Workshop](#)
- [The Building Envelope](#)
- [Boilers and Combustion Devices](#)
- [Steam and Condensate Systems](#)
- [HVAC Systems](#)
- [Electric Energy Management](#)
- [Lighting](#)
- [Building Automation Systems](#)
- [Waste Heat Recovery](#)
- [Lesson 19: Advanced Technologies](#)
- [Building Commissioning](#)
- [Project Management](#)

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AFFILIATED WITH THE AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

Stationary (NTF) Training Course Schedule

ADVANCED CONTROLS & BUILDING AUTOMATION SYSTEMS

ADVANCED CONTROLS & BUILDING AUTOMATION SYSTEMS

Prerequisite: Students should have taken Basic Controls and Building Automation Systems or have similar work experience

This advanced course has been developed for individuals who want to develop the understanding of how DDC controls and Building Automation Systems are installed, wired, operated, and programmed, also included is the insight of the various related software packages, that drive and manipulate these systems. We will discuss and demonstrate advanced control technologies dealing with the architecture of various manufactures of Building Automation Systems. We will demonstrate how they are installed, wired, and then programmed. Also, there will be main topic lectures on BAS Supervisory Controllers, Standalone controllers, and their communication protocols.

There will also be lectures on advanced control strategies and the understanding of building optimization for curtailing the use of energy.

After the completion of this course the participants will be able to:

- Describe the different types of control actions and when to use them
- Identify Building Automation System main components and where their used
- Define and select the proper Automation System for various locations
- Define the different types of Analog and Binary inputs and outputs
- Understand system wiring through various schematic diagrams of installed systems
- Wire Building Automation System main components
- Understand the various types of BAS communication protocols
- Program various type of industry controllers
- Comprehend the different types of operator interfaces and how they communicate
- Describe control strategies and how buildings are optimized for peak efficiency
- Define the different types of programming graphic methods



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STATIONARY TRAINING CONFERENCE

Stationary Training Conference. This is for Local Union training staff and those invited by the local union to attend. Note, this is a 2 day event.

HIGH PRESSURE BOILER OPERATIONS

High Pressure Boilers course will help to assist in preparing the Stationary Engineer for the proper operation of High-Pressure boilers and will also help with preparing for the facility operating engineer licensing. This course provides a comprehensive overview of the safe and efficient operation of high-pressure steam boilers and related equipment. The latest combustion control technology, as well as EPA regulations and their implications, are covered in this course. The course is divided into sections to aid comprehension of key concepts:

- Steam Boilers
- Boiler Systems
- Steam Boiler Fittings
- Steam Systems
- Feedwater Systems
- Water Treatment
- Combustion Equipment
- Fuels and Combustion
- Combustion and Boiler Controls
- Draft Systems
- Instrumentation and Control Systems
- Steam Boiler Operation
- Licensing

ROOFTOP UNIT MAINTENANCE & HVAC TROUBLESHOOTING

Light commercial Rooftop units are the topic of this class.. There will be extensive hands-on training for maintenance and service engineers who have had basic air conditioning training. **Students must have the EPA Universal Certification to participate in the practical activities of the course.** The focus will be on identifying various components of RTU's , charging practices ,



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troubleshooting , repair, and maintenance.

CHIEF ENGINEER COURSE

This Seminar is designed for chief engineers or engineers training to make the transition to chief or lead engineer. This seminar will provide the student the necessary administrative and personnel skills to handle the day-to-day leadership challenges associated with this position.

The ten sections are:

- Recommended Skills levels
- Planning and Time Management
- Budget Preparation
- Computer Applications
- Record Keeping
- Benefits of an Internal Work Force
- Reports and Presentations
- Health and Safety
- Human Relations
- Energy Conservation.

The Chief Engineers class has been updated as a Blended Learning Environment, in which traditional face-to-face instruction is also supplemented with specific computer assisted Learning. The purpose is to take advantage of the best features of both face-to-face and computer assisted learning in the same classroom setting. During class you will be given a set of credentials and guided how to log onto the platform. Once logged in, you will be instructed on how to use and navigate the system. Additionally, while performing some of the class exercises, you will be using various types of software for letter writing, email, budgets, presentations etc. With all that said, it would be advantageous if each member would bring their own laptop computer to class, being that some of these exercises will remain on the computer for the student's future reference. If you cannot bring your own laptop computer or you do not own a laptop computer, we can provide a computer for you to use during the class.

Visit <https://iuoe-itrs.org> for a Full Schedule and to Register for Classes

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TEACHING TECHNIQUES I

Teaching Techniques I is designed especially for part-time, new or recently hired instructors. The course presents useful introductory concepts and also requires actual practice teaching with constructive feedback. It is conducted over a 4-½ day period. It will provide instructors with all materials and demonstrate various teaching techniques for classroom application and meets the U.S. Department of Labor requirements for apprentice instructor training.

PROGRAMMABLE LOGIC CONTROLLER (PLC)

This course is intended to instruct stationary engineers on the basics of programmable logic controllers. It covers basic programming of some of the most common equipment in the industry, basics needed for configuring and troubleshooting devices on a network, and industry best practices for installing and maintaining these systems. It will provide students with the tools needed to install and program PLCs. It will also orient students on methods of networking and troubleshooting SCADA systems and familiarize them with terminology and methods so that they can adapt these lessons to their facility's equipment.

FACILITY WATER CHEMISTRY & TREATMENT

This seminar covers the chemistry behind plant & facility water treatment programs and how it helps ensure that water systems are safe from scale, corrosion, oxygen, carryover, and other issues. Hands on training of actual plant & facility water systems at the training center will also be included.

COOLING TOWER OPERATION & MAINTENANCE

This seminar is focused on the care of evaporative cooling equipment. The course provides useful information about how to operate equipment for optimal performance and reliability. Students will learn the design of cooling towers. It covers water quality, water flow balance, water quantity, fill condition, fan systems, and overall maintenance.



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THERMOGRAPHY, VIBRATION & EMERGING APPLICATIONS FROM FLUKE

Important tools of our trade will be covered in detail. Get hands on training using the latest Fluke Thermal Imagers and additional equipment for testing and troubleshooting. Thermal imagers and Vibration Analysers give engineers insights into how equipment is actually running and can identify problems before component failure occurs. The vibration analysis portion gives students hands on training to test the alignment and vibration of pumps and motors. Precise alignment helps ensure the equipment functions within the correct parameters to provide efficient long term service.

TEACHING TECHNIQUES II OPEN TO INSTRUCTORS

This workshop is designed for IUOE instructors who have completed Teaching Techniques I (Basic). Topics include: Presentation Techniques, Content Design, Assessment, Classroom Management and Engaging and Motivating Learners. Classroom technologies to be covered include PowerPoint.

OSHA 3015 EXCAVATION, TRENCHING AND SOIL MECHANICS

OPEN TO IUOE INSTRUCTORS ONLY

AUTHORIZES INSTRUCTOR TO TEACH: Trenching, excavation, and soil mechanics safety training and awareness courses.

This course focuses on OSHA standards and on the safety aspects of excavation and trenching. Students are introduced to practical soil mechanics and its relationship to the stability of shored and unshored slopes and walls of excavations. Various types of shoring (wood timbers and hydraulic) are covered.



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40?HOUR HAZWOPER

Required for workers that perform activities that expose or potentially expose them to hazardous substances. This course is specifically designed for workers who are involved in clean-up operations, voluntary clean-up operations, emergency response operations, and storage, disposal, or treatment of hazardous substances or uncontrolled hazardous waste sites. Topics include protection against hazardous chemicals, elimination of hazardous chemicals, safety of workers and the environment and OSHA regulations. This course covers topics included in 29 CFR 1910.120.

HAZWOPER TRAIN-THE-TRAINER

OPEN TO IUOE INSTRUCTORS ONLY

AUTHORIZES INSTRUCTOR TO TEACH: HAZWOPER – 16, 24 and 40-Hour, 8-Hour Refresher, 8-Hour Supervisor, and other applicable courses.

Covers HAZWOPER standards, teaching techniques, industrial hygiene and toxicology, hazard communication (includes GHS), respirators and respiratory protection, personal protective equipment, instrumentation and monitoring, confined space, medical monitoring, radiation, heat/cold stress, emergency response, decontamination, work zones, drum handling, and posttest.