



# International Union of Operating Engineers

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

## Training Course Schedule

### Courses from July 27, 2024 - September 25, 2024

Course - Session	Date(s)
Electrical Troubleshooting & Variable Frequency Drive Operations	Jul 25, 2024 - Jul 28, 2024
Generator Maintenance & Operation	Jul 29, 2024 - Aug 1, 2024
Crane Operations - Level 1 Crane Operations for Beginners	Jul 29, 2024 - Aug 2, 2024
Excavation Operations	Jul 29, 2024 - Aug 2, 2024
Chiller Efficiency	Aug 1, 2024 - Aug 3, 2024
Pipeline - ONLINE OILER TRAINING	Aug 1, 2024 - Aug 1, 2024
NATE Test Prep	Aug 2, 2024 - Aug 4, 2024
Excavation Operations	Aug 5, 2024 - Aug 9, 2024
Pump Maintenance & Operation	Aug 5, 2024 - Aug 8, 2024
Data Center Operations	Aug 5, 2024 - Aug 9, 2024
Crane Operations - Practical Testing for NCCCO Certification	Aug 5, 2024 - Aug 9, 2024
Stationary Training Conference	Aug 6, 2024 - Aug 7, 2024
Programmable Logic Controller (PLC)	Aug 12, 2024 - Aug 14, 2024
Blueprint Reading for Stationary Engineers	Aug 12, 2024 - Aug 16, 2024
Crane Operations - LMI Setup & Crane Operations	Aug 12, 2024 - Aug 23, 2024
National Organizing Conference	Aug 13, 2024 - Aug 15, 2024
Electrical Troubleshooting & Variable Frequency Drive Operations	Aug 16, 2024 - Aug 19, 2024
Chief Engineer/Facility Management Seminar	Aug 17, 2024 - Aug 21, 2024

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Basic Controls and Building Automation Systems	Aug 17, 2024 - Aug 19, 2024
Excavation Operations	Aug 19, 2024 - Aug 23, 2024
Solar Panel Installation Maintenance & Troubleshooting	Aug 19, 2024 - Aug 22, 2024
Welding	Aug 19, 2024 - Aug 23, 2024
Crane Operations - Crane Standards Training and Load Chart Review for Written Exam – Mobile Cranes	Aug 19, 2024 - Aug 22, 2024
Crane Operations – Tower Crane Standards Training & Load Chart Review / NCCCO Practical Testing for Tower Crane Certification	Aug 19, 2024 - Aug 23, 2024
H&P Training Conference	Aug 20, 2024 - Aug 22, 2024
HVAC Systems 2	Aug 26, 2024 - Aug 30, 2024
Bulldozer Operations	Aug 26, 2024 - Aug 30, 2024
Electrical Systems 1	Aug 27, 2024 - Aug 31, 2024
Mechanics Training - Intro to Mobile Air Conditioning Systems / 609 MACS Certification	Aug 27, 2024 - Aug 29, 2024
Drone Training	Sep 9, 2024 - Sep 13, 2024
Excavation Operations	Sep 9, 2024 - Sep 13, 2024
Welding	Sep 9, 2024 - Sep 13, 2024
Teaching Techniques I	Sep 9, 2024 - Sep 13, 2024
HVAC Systems 1	Sep 9, 2024 - Sep 13, 2024
Pump Maintenance & Operation	Sep 9, 2024 - Sep 12, 2024
Crane Operations - Intro To Luffing Crawler Crane Operations	Sep 9, 2024 - Sep 13, 2024

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Rigger Level 1 & Signalperson Practical Exams for NCCCO Certification	Sep 9, 2024 - Sep 13, 2024
Crane Operations - Level 1 Crane Operations for Beginners	Sep 9, 2024 - Sep 13, 2024
Mechanics Training - Intro to Diesel Laptops & Diagnostic Software	Sep 9, 2024 - Sep 13, 2024
Electrical Systems 1	Sep 9, 2024 - Sep 13, 2024
OSHA 510 Safety & Health Standards for the Construction Industry	Sep 10, 2024 - Sep 13, 2024
Pump Maintenance & Operation	Sep 13, 2024 - Sep 16, 2024
OSHA 500 Trainer Course Construction Industry	Sep 14, 2024 - Sep 17, 2024
Bulldozer Operations	Sep 16, 2024 - Sep 20, 2024
Crane Operations - Advanced Crane Operations	Sep 16, 2024 - Sep 20, 2024
Automatic Transfer Switch (ATS) for Generators	Sep 17, 2024 - Sep 19, 2024
Advanced Controls & Building Automation Systems	Sep 21, 2024 - Sep 23, 2024
Excavation Operations	Sep 23, 2024 - Sep 27, 2024
OSHA 521 Industrial Hygiene	Sep 23, 2024 - Sep 27, 2024
Mechanics Training - Hydraulic Fundamentals	Sep 23, 2024 - Sep 27, 2024
Crane Operations - Liebherr 81K.1 Fast Erecting Tower Crane Assembly/Disassembly	Sep 23, 2024 - Sep 27, 2024
Crane Operations - Intro To Tower Crane Operations	Sep 23, 2024 - Sep 27, 2024
Rigging Safety/Signaling Safety Train the Trainer	Sep 23, 2024 - Sep 27, 2024
Crane Operations - LMI Setup & Crane Operations	Sep 23, 2024 - Sep 27, 2024
Certified Pool Operator	Sep 24, 2024 - Sep 26, 2024

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## Training Course Schedule

GPS Training for Instructors Only

Sep 24, 2024 - Sep 26, 2024

Brokk Operations - Intro to Brokk Operations

Sep 24, 2024 - Sep 26, 2024

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## Training Course Schedule

### Training Course Descriptions

## 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.
- 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.

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## Training Course Schedule

- 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.

## 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.

## CRANE OPERATIONS - LEVEL 1 CRANE OPERATIONS FOR BEGINNERS

**Crane Operations for Beginners (Level 1)** - In this class students will be taught the requirements for crane inspection, the basics of crane set up including LMI's and LML's. This portion of the class has a hands-on approach. The largest portion of the class will be actual seat time instruction in the “How To” operate a crane safely and build on basic skills necessary to lift loads.

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### **EXCAVATION OPERATIONS**

**Excavation Operations** – The IUOE Training and Education Center will be offering the Excavation Operations course for Operators with skill levels of beginner through advanced. This 40-hour course will include classroom instruction and hands-on training. Classroom instruction topics will include machine safety, working around utilities and OSHA regulations that apply to trenching/excavation activities. Hands-on will consist of machine control familiarization, benching and sloping techniques, slot dozing and backfill operations. Upon completion of this course, the member will understand trench safety techniques and how to move dirt efficiently.

### **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.

### **PIPELINE - ONLINE OILER TRAINING**

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## Training Course Schedule

This is an online class only. The class will take approx. 8 hours to complete, you will be able to complete the class at your own pace, meaning you can log in and out as needed to complete the course.

This class is intended for anyone who wants to work as an oiler in the pipeline industry. It is also intended for operators who have never worked in the pipeline industry.

Topics discussed and included in the course:

- Work Environment
- Duties of a Pipeline Oiler
- Nomenclature
- Work Ethic
- Vocabulary Games and review
- Final Exam
- Final Vocabulary Exam

The member will receive a certificate of completion at the end of the course.

## 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). (<https://natex.org/>)

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

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## Training Course Schedule

[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)

## 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.

## 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.

## CRANE OPERATIONS - PRACTICAL TESTING FOR NCCCO CERTIFICATION

**Practical Testing for NCCCO Certification** - Please remember when registering for this course that you should have prior experience in crane operations. The training portion of this course is only an equipment familiarization period on the crane or cranes you would like to be tested on. Members will complete a NCCCO application when the course begins and all candidate testing fees are the responsibility of the candidate.

Practical Testing available on the following cranes

- Lattice Boom Cranes
- Telescopic Boom Cranes—Swing Cab (TLL)

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## Training Course Schedule

- Telescopic Boom Cranes—Fixed Cab (TSS)
- Tower Crane
- Overhead Crane

## 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.

## 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.

## 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.

## CRANE OPERATIONS - LMI SETUP & CRANE OPERATIONS

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## Training Course Schedule

**LMI Set-up & Crane Operations (Level 1)** - This course is an entry level course on the set up and operations of a mobile crane. This course has classroom and hands-on exercises that cover basic crane knowledge, load charts, daily inspection, LMI set-up, outrigger and jib set-up for a variety of cranes.

**Prerequisites for Level 1** – Member must have completed ITEC Level 1 Crane Operations course or be certified/licensed for hydraulic and/or lattice boom cranes. Certifications/licenses include NCCCO, OECP, Red Seal, Connecticut or New York State license.

## NATIONAL ORGANIZING CONFERENCE

International and Local staff will conduct detailed training sessions on all aspects of organizing workers and contractors. This will also include Breakout sessions for U.S. and Canadian organizers and the general sessions will cover organizing techniques and strategies, legal and political issues, research and the use of social media and technology in organizing.

## CHIEF ENGINEER/FACILITY MANAGEMENT SEMINAR

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

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## Training Course Schedule

- 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.

## BASIC CONTROLS AND BUILDING AUTOMATION SYSTEMS

### 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

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## Training Course Schedule

- 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 through 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



## 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.

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## Training Course Schedule

### WELDING

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

### CRANE OPERATIONS - CRANE STANDARDS TRAINING AND LOAD CHART REVIEW FOR WRITTEN EXAM – MOBILE CRANES

**Crane Operations – Crane Standards Training and Load Chart Review for Written Exam – Mobile Cranes** - This course will include standards from OSHA 1926.1400 and ASME B30.6, load chart and range diagram review.

### CRANE OPERATIONS – TOWER CRANE STANDARDS TRAINING & LOAD CHART REVIEW / NCCCO PRACTICAL TESTING FOR TOWER CRANE CERTIFICATION

**Crane Operations – Tower Crane Standards Training & Load Chart Review / NCCCO Practical Testing for Tower Crane Certification** - This course will include standards from OSHA 1926.1435 and ASME B30.3, load chart and range diagram review.

Please remember when registering for this course that you should have prior experience in crane operations. The training portion of this course is only an equipment familiarization period on the crane or cranes you would like to be tested on. Members will complete a NCCCO application when the course begins and all candidate testing fees are the responsibility of the candidate.

Practical Testing available for Tower Crane only.

**Members must bring PPE to include hardhat, boots, gloves, safety vest and safety glasses to training.**



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## Training Course Schedule

### H&P TRAINING CONFERENCE

H&P Training Conference

### 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.

### BULLDOZER OPERATIONS

The IUOE Training & Education Center will be offering classes in all areas of bulldozer operation from beginner through advanced.

Topics covered:

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## Training Course Schedule

- Working on Slopes
- Slot Dozing
- Backfilling
- Cuts and Fills
- Working with Grade Control.

## 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.

## MECHANICS TRAINING - INTRO TO MOBILE AIR CONDITIONING SYSTEMS / 609 MACS CERTIFICATION

### **Mechanics Training - Intro to Mobile Air Conditioning Systems / 609 MACS**

**Certification** - This is a 3 Day (24-Hour) course designed to train a person to properly service mobile air conditioning systems as well as provide each person taking the course the opportunity to become certified to legally perform mobile air conditioning service work. At the present time, the certification is effective for a person's lifetime.

Topics Covered Include:





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## Training Course Schedule

- A. Refrigerant types and behavior
- B. Physical principles relating to air conditioning
- C. Heating system design and repair
- D. Refrigeration components
- E. Refrigerant control systems
- F. Refrigerant identification
- G. Performance testing an air conditioning system
- H. Leak detecting
- I. Recovering refrigerant
- J. Recycling refrigerant
- K. Evacuating a system
- L. Flushing a system
- M. Component replacement
- N. Adding lubricant
- O. Charging the system
- P. Environmental concerns relating to mobile air conditioning systems

Considerable class time will be devoted to hands-on practice of required service skills.

**Member is responsible for MACS Section 609 Certification fee. Testing fee of \$26.50 will be due after testing is complete, payments methods include personal check or credit card.**

## DRONE TRAINING

This will be a comprehensive look at the use and versatility of Drones on today's construction projects. After completing this course you will be able to prepare for your Commercial Drone Pilot's License Test.

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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.

### 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.

### CRANE OPERATIONS - INTRO TO LUFFING CRAWLER CRANE OPERATIONS

**Intro to Luffing Crawler Crane Operations** - This course is for students with previous crane experience. The course will introduce operators to the procedures for raising and lowering luffing boom systems as well as their operation. It will cover what critical boom-to-luff angles are and where to find them. It will also cover how luffer charts differ from other charts.



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### **RIGGER LEVEL 1 & SIGNALPERSON PRACTICAL EXAMS FOR NCCCO CERTIFICATION RIGGER LEVEL 1 AND SIGNALPERSON PRACTICAL EXAMS FOR NCCCO CERTIFICATION**

### **MECHANICS TRAINING - INTRO TO DIESEL LAPTOPS & DIAGNOSTIC SOFTWARE**

#### **Mechanics Training - Introduction to Diesel Laptops and Diagnostic Software -**

In this course, members will be given an introduction to the diesel laptops diagnostic software and hardware, along with applications of these tools.

Topics will include:

- Introduction to the TEXA software
- Aftertreatment
- Electrical 1
- Electrical 2
- Data bus Diagnostics

### **OSHA 510 SAFETY & HEALTH STANDARDS FOR THE CONSTRUCTION INDUSTRY OPEN TO IUOE INSTRUCTORS ONLY**

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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.

### **CRANE OPERATIONS - ADVANCED CRANE OPERATIONS**

**Advanced Crane Operations (Level 3)** - This course focuses on “TWO CRANE PICKS”, the math and paperwork necessary to make them. In addition, this class covers the requirements for ground bearing pressure, rigging, critical lift paper work and calculations. The students will operate the cranes every day and will execute a two-crane blind pick by the end of class.

### **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.

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.



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## Training Course Schedule

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.

## 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:

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# International Union of Operating Engineers

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## Training Course Schedule

- 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

## 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.

## MECHANICS TRAINING - HYDRAULIC FUNDAMENTALS

### Mechanics Training - Hydraulic Fundamentals

This course will give the student a strong foundation in hydraulic systems used in mobile equipment. Upon completion, participants will be able to:

- Describe the principles of hydraulics.
- Identify and describe the function of the components that make up a typical hydraulic system.
- Identify and read the schematic symbols in a typical hydraulic schematic.

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## Training Course Schedule

- Understand the use and operation of load sensing variable displacement pumps.

The learning environment will be established in both the classroom and the service shop.

### **CRANE OPERATIONS - LIEBHERR 81K.1 FAST ERECTING TOWER CRANE ASSEMBLY/DISASSEMBLY**

**Liebherr 81K.1 Fast Erecting Tower Crane Assembly/Disassembly** - This course will cover the manufacturers procedures of erection, dismantle and climbing of the Liebherr 81K.1 Fast Erecting Tower Crane. Also covered is the inspection and setting of all safety limits. Students will gain hands-on experience of the controls for operating while erecting and dismantling the crane. During the multiple erect and dismantles of the crane during the week, changes in jib configuration will be performed. Load testing and programming of operational and load limits will also be performed.

### **CRANE OPERATIONS - INTRO TO TOWER CRANE OPERATIONS**

**Introduction to Tower Crane Operations (Level 1)** - This course is for students with previous crane experience. The course will introduce students to three types of tower cranes: Hammerhead tower cranes, luffing boom tower cranes and self-erecting tower cranes. This course will cover cab controls and operating procedures. A major portion of the class will be hands on exercises teaching load control and operational dynamics.

### **RIGGING SAFETY/SIGNALING SAFETY TRAIN THE TRAINER OPEN TO IUOE INSTRUCTORS Only**

**AUTHORIZES INSTRUCTOR TO TEACH:** Rigging and Signaling Safety Awareness.

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## Training Course Schedule

Topics include the configuration and types of slings, rigging hardware, the types of hitches and basic calculations, communications, power line safety, and lift plans. Students are given rigger and signal person qualification criteria and protocol for issuing IUOE CPWR cards as a qualified rigger and/or a qualified signal person.

### **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.

### **GPS TRAINING FOR INSTRUCTORS ONLY**

**GPS Training for Instructors Only - Courses are available to active IUOE Instructors only.**

### **BROKK OPERATIONS - INTRO TO BROKK OPERATIONS**

**Intro to Brokk Operations** - This class will introduce students to the Brokk 120D Demolition Robot. Topics covered will include discussions of suitable applications, basic maintenance, control familiarization, tool swapping procedures and supervised demolition. This is a 3-day course that will include classroom and hands-on operations.