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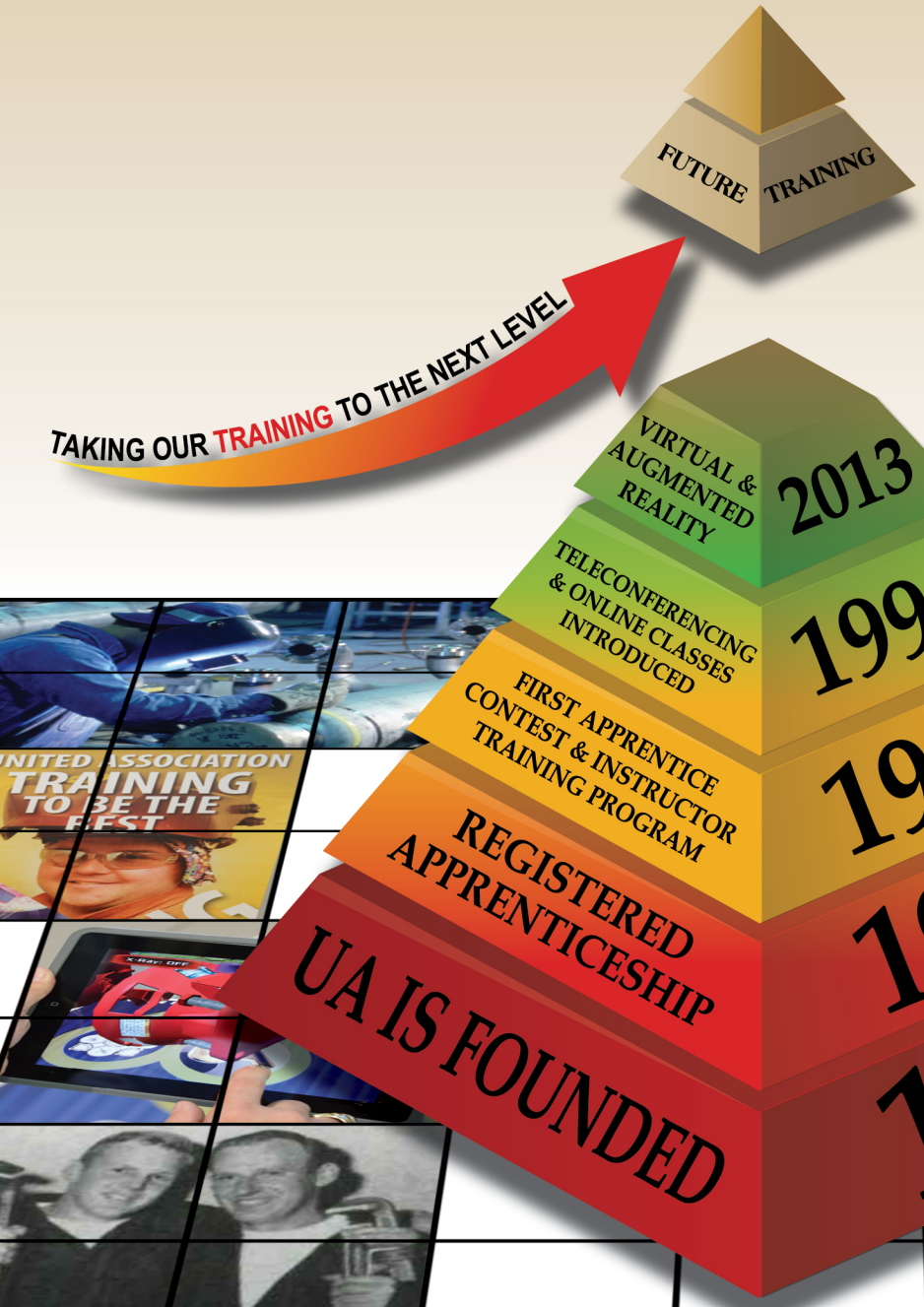
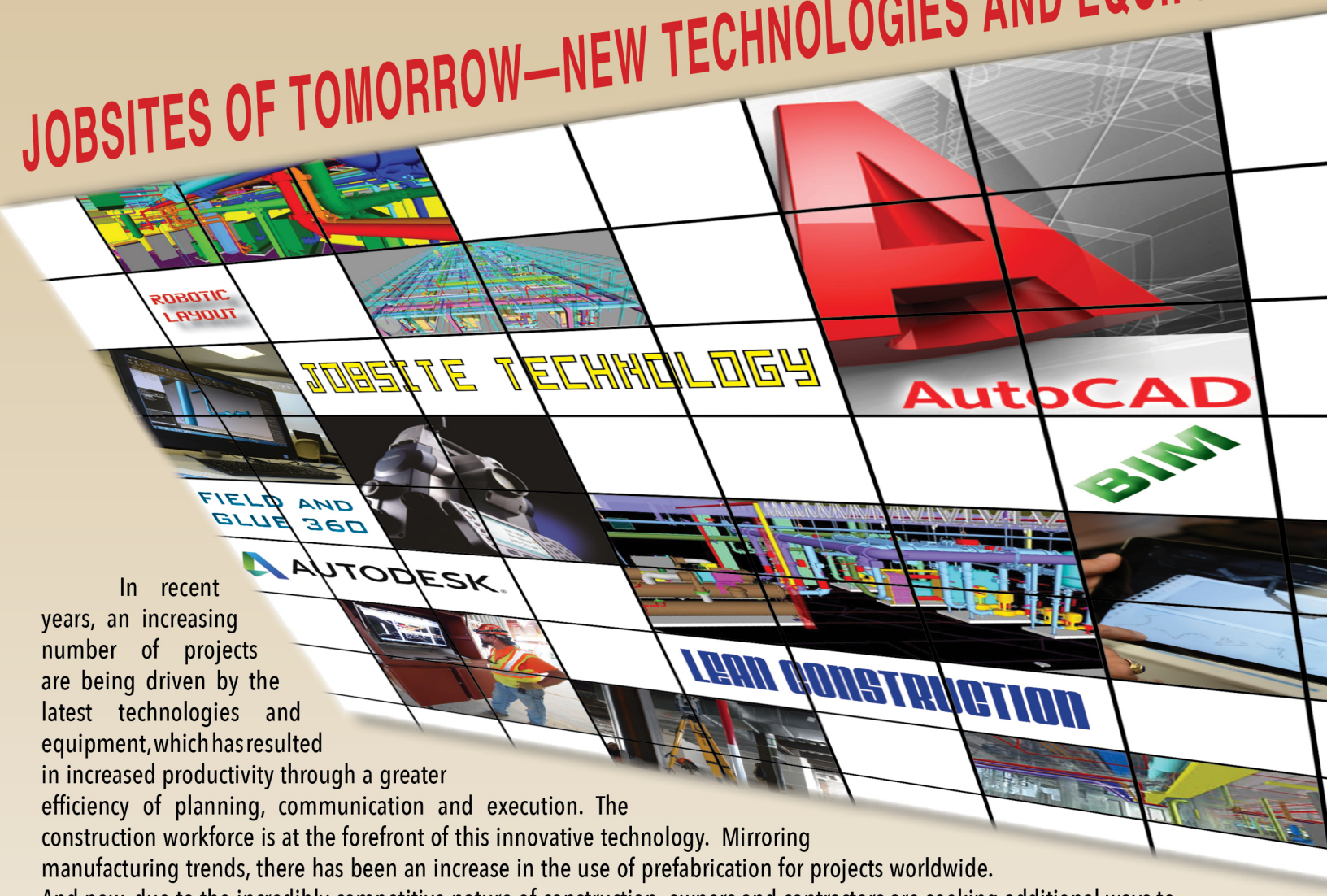
INSTRUCTOR TRAINING PROGRAM

Ann Arbor, Michigan
August 8-14, 2015



JOBSITES OF TOMORROW—NEW TECHNOLOGIES AND EQUIPMENT



In recent years, an increasing number of projects are being driven by the latest technologies and equipment, which has resulted in increased productivity through a greater efficiency of planning, communication and execution. The construction workforce is at the forefront of this innovative technology. Mirroring manufacturing trends, there has been an increase in the use of prefabrication for projects worldwide. And now, due to the incredibly competitive nature of construction, owners and contractors are seeking additional ways to lower costs and to run their operations more efficiently. One of the ways they are doing this is by introducing timesaving technologies and equipment that will aid in streamlining communication between designers, engineers and those who are working in the field. Other examples of recent innovations include: real-time apps, software programs that allow the user to solve up-to-the-minute problems, mobile devices that permit the user to assess project information from the field, virtual-reality simulations that can predict challenges ahead of time–and there are even examples of large projects utilizing flyover drones to record the progression of work.

Contractors are replacing plans and spec drawings with electronic documents that authorized team members can access from any device. New technology is reducing the need for IT support and for computing hardware at jobsite trailers. Change requests, invoices, and other field-generated documents are being done in the field. There is now real-time linking of a project's financial data and operational data, which allows managers to react to potential problems before they result in real losses. Multiple trips between jobsites and the office and/or trailers to deliver, gather, or process information are being eliminated–all by designing a jobsite's workflow to be seamless through the use of new technologies and sophisticated equipment.

This forward-thinking evolution will bode well for our Y and Millennial generations, who are fluent in 3-D environments and mobile technologies. By embracing these environments, the UA workforce will excel–becoming, not only the most skilled, but also the most cost-effective & productive professionals, which will lead to increased man-hours overall. In order to continue to lead the way in training, we have put together our ***"Jobsites of Tomorrow"*** series of courses–all designed to provide you with the resources to be aware of the ever-changing way projects are being completed and equipment is being serviced.

INTERNATIONAL TRAINING FUND

Leading the way in training on emerging construction education. Where will you be?

United Association Building
Three Park Place
Annapolis, MD 21401
(410) 269-2000
http://www.ua.org

Dear Brothers and Sisters:

For more than six decades, the Instructor Training Program has been providing the highest level of education to United Association instructors through the Instructor Training Program, our regional training program, which is now online. We train the trainers in order to ensure that our members have access to the skills they need to be successful in the marketplace. Over the decades, the program has evolved continuously, and the 2015 program is no exception. As you prepare to come to Ann Arbor for UA week, we want to share with you some of the record number of new courses that have been developed for our instructors. As you read these descriptions, we also ask you to keep in mind some of our goals in developing these courses: to incorporate the rising use of digital and electronic resources in our trade, such as iPads, CAD, BIM and 3-D imaging; to continue our efforts to expand apprenticeship to 20 percent of our membership, and to embrace new technology in sectors of our trade.

While creating a skilled workforce is increasingly challenging, our comprehensive training curriculum keeps our piping professionals competitive and valuable to our contractors. The curriculum far exceeds industry standards, as you will see from our online catalog. An example of some of the classes that are brand new this year or have been revised include: *Ammonia Piping, Service and Maintenance, HVACR Basic Electricity*, *BIM 360 Field and Glue*, *VFD Fundamentals and Commissioning*, and *Cooling Tower Service and Maintenance*, to name just a few.

This brief overview gives you an idea of the depth of our program and the commitment we have to keeping it as up-to-date and applicable as possible. However, the Instructor Training Program experience extends beyond the classroom. Once again, we will be holding the 2015 International Apprentice Contest, now in its ninth year since being reinstated. I hope you will take some time to observe these talented apprentices as they perform under pressure. We think you will feel quite proud of them all.

For the past few years, we have been holding a 5K race to support veterans and wounded warriors. Each year, we raise significant funds for veterans and their families. The race is held during our Block Party in downtown Ann Arbor, which also features live entertainment and offers lots of opportunity to spend time outside the classroom with your fellow instructors. This year's Block Party will feature live entertainment from the *Tool Shed Band* sponsored by Milwaukee Tools.

For returning instructors, welcome back. To those who are participating for the first time, we are pleased you will be with us. We look forward to seeing everyone in Ann Arbor for our 2015 Instructor Training Program.

With heartfelt best wishes, I remain

Fraternally yours,

William P. Hite
General President

“The procedures, policies, and course offerings set forth in this catalog are subject to revision from time to time. The most up-to-date available versions of the policies, procedures, and course offerings are contained in the electronic version of this document which may be accessed at uanet.org.”

Table of Contents

Calendar of Events

Saturday, August 8, 2015

7:30 a.m. to 5:30 p.m. . . . . **International Pipe Trades Joint Training Committee Bookstore Open**
Instructional Materials and Books
Morris Lawrence Building, Room - ML 103

8:00 a.m. to 5:00 p.m. . . . . **Registration—For United Association Instructors, Instructional Faculty, Officials and Guests**
Washtenaw Community College
Lobby of the Morris Lawrence Building
4800 East Huron River Drive
Ann Arbor, Michigan 48105

8:00 a.m. to 5:00 p.m. . . . . **Instructor Training Program and the International Apprentice Contest Begins**

8:00 a.m. to 5:00 p.m. . . . . **Industry Sponsored Vendor Displays**
(Complimentary pastries and coffee served in the morning and hot dogs, chips and beverages served in the afternoon)

9:00 a.m. to 10:00 a.m. . . . . **Faculty Registration**

9:00 a.m. to 12:00 p.m. . . . . **Blackboard™ Drop In Session**
Room - ML 124

10:00 a.m. to 11:00 a.m. . . . . **Faculty Meetings for ALL Faculty (Required)**
Washtenaw Community College
Morris Lawrence Building, Towsley Auditorium

10:00 a.m. to 2:00 p.m. . . . . ***Backflow Prevention Assembly Tester Recertification**
Room - OE 156

10:00 a.m. to 4:00 p.m. . . . . ***UA Star Certification/Recertification Exam**
Room - GM 212

11:30 a.m. to 4:00 p.m. . . . . **RTA Drop in Session**
Room - TI 243

12:00 p.m. to 4:00 p.m. . . . . ***Adult Life Support/First Aid Recertification Exam**
Room - GM 332

1:00 p.m. to 5:00 p.m. . . . . **Blackboard™ Drop In Session**
Room - ML 124

3:00 p.m. to 4:00 p.m. . . . . **First Year Participants Meeting (Required)**
Washtenaw Community College
Morris Lawrence Building, Towsley Auditorium

Sunday, August 9, 2015

7:30 a.m. to 5:30 p.m. . . . . **International Pipe Trades Joint Training Committee Bookstore Open**
Instructional Materials and Books
Morris Lawrence Building, Room ML 103

8:00 a.m. to 5:00 p.m. . . . . **Instructor Training Program and the International Apprentice Contest Continues**

5:00 p.m. to 5:30 p.m. . . . . ***Authorized Testing Representative (ATR) Visual Acuity Exams**
Room - LA 374

6:00 p.m. to 9:00 p.m. . . . . **An Evening in Ypsilanti's Depot Town**
5 East Cross Street, Ypsilanti, Michigan

Monday, August 10, 2015

7:30 a.m. to 5:30 p.m. . . . . **International Pipe Trades Joint Training Committee Bookstore Open**
Instructional Materials and Books
Morris Lawrence Building, Room - ML 103

Monday, August 10, 2015 *(continued)*

8:00 a.m. to 5:00 p.m. . . . . **Instructor Training Program and the International Apprentice Contest Continues**

6:00 p.m. to 10:00 p.m. . . . . **UA Block Party**
Downtown Ann Arbor, Main Street
Fourth Annual UA 5K Run (6:45 p.m.) and Pub Crawl (8:00 p.m.)
Proceeds Benefit the Semper Fi Fund
Live Entertainment with *"Tool Shed"* by Milwaukee Tools

Tuesday, August 11, 2015

7:30 a.m. to 5:30 p.m. . . . . **International Pipe Trades Joint Training Committee Bookstore Open**
Instructional Materials and Books
Morris Lawrence Building
Room - ML 103

8:00 a.m. to 5:00 p.m. . . . . **Instructor Training Program and the International Apprentice Contest Continues**

Wednesday, August 12, 2015

7:30 a.m. to 5:30 p.m. . . . . **International Pipe Trades Joint Training Committee Bookstore Open**
Instructional Materials and Books
Morris Lawrence Building, Room - ML 103

8:00 a.m. to 5:00 p.m. . . . . **Instructor Training Program and the International Apprentice Contest Continues**

9:00 a.m. to 12:00 p.m. . . . . **Industry Day**

Thursday, August 13, 2015

6:30 a.m. to 11:30 a.m. . . . . **International Pipe Trades Joint Training Committee Bookstore Open**
Instructional Materials and Books
Morris Lawrence Building, Room - ML 103

7:00 a.m. to 11:00 a.m. . . . . **Instructor Training Program Continues and the International Apprentice Contest Concludes

3:00 p.m. to 5:30 p.m. . . . . **Instructor Training Program Completion Ceremony/ International Apprentice Contest Winners Announced**
Eastern Michigan University
Convocation Center
799 North Hewitt Road
Ypsilanti, Michigan 48197
Presiding: Christopher Haslinger

Friday, August 14, 2015

7:00 a.m. to 11:00 a.m. . . . . **Instructor Training Program Concludes

Class Meets Daily, Sunday to Friday, August 9-14, 2015
Students Must Attend All Hours of All Classes to Receive Credit

*Special Program Resources and Certifications (See page 17 for details)
**Note time change

The United Association (UA) has a continuing interest in the quality of our members' job performance. We believe that you, the UA instructors, are key to maintaining the high level of achievement for which we are known, and we are determined to retain our esteemed position in this regard.

The ability to create quality craftsmanship comes from good teaching. Therefore, we designed the United Association Instructor Training Program (ITP) specifically for you and your needs as instructors. Our aim is to help improve teaching techniques, diversify mechanical skills, and enhance knowledge of the scientific and technical elements of the trade. We encourage you to make the most of this unique opportunity. **Courses are available to UA members ONLY.**

NOTE: All Certification fees are the responsibility of the JAC/Instructor. Grades and certifications will not be awarded until all fees are paid. This year all textbooks, as well as any DVD resource sets required for instructors taking classes at ITP, will be paid for by the ITF through the grant initiative program.

Purposes

The Instructor Training Program for instructors of journey workers and apprentices is designed to:

- Increase UA instructors' proficiency of instructional techniques and materials
- Acquaint instructors with the philosophy and principles of education, especially trade, industrial, and technical education
- Provide learning experiences in the principles and the fundamentals of the applied knowledge subjects
- Expand the understanding of our instructors in the technical aspects of the crafts and convey information to the instructors about the latest developments in this area

Elements of the Program

200-Hour Instructor Certification Program—This program is divided into two main elements of instruction: the professional element, which involves courses dealing with the principles and techniques of teaching; and the applied and technical element, which involves courses dealing with trade-specific technology and science.

Instructors in this program will take 100 hours of professional courses and a minimum of 100 hours of technical courses. Some courses are available online, but we encourage taking courses in person at the annual Instructor Training Program.

120-Hour Coordinator Certification Program—This program is designed for Training Coordinators/Directors or members of the JAC operating the UA training program within their local. Instructors who successfully complete the required courses will then earn their coordinator's certificate. These courses focus on UA-specific interests and administration of training programs.

Certification

The title *Certified Instructor of Journey workers and Apprentices in the Plumbing and Pipefitting Industry* will be conferred on those who satisfactorily complete **200 hours of course work (including all mandatory classes)**.

The title *Certified Coordinator of Journey workers and Apprentices in the Plumbing and Pipefitting Industry* will be conferred on those who satisfactorily complete **120 hours of required courses in the Coordinator's Certification Program.**

To earn a *Certificate of Attendance*, one must complete all **40 hours** of classes during the Instructor Training Program. Certificates of attendance are not offered for online courses.

Achievement and Attendance

The Registrar will record your achievements in the form of grades. Your teachers will evaluate your performance and report their findings to the Registrar. Each faculty member, in consultation with the Director of Training or his designated representative, determines what grading methodology is most appropriate for evaluating his or her students.

The Registrar will send you a transcript following the close of the session. The transcript contains the name, credit hours, and grade earned for each course.

NOTE: Classes end at 11:00 a.m. on Friday, August 14, 2015.

Registration

To be eligible for enrollment, an instructor must receive approval from his or her local union, and must be an active or prospective instructor in an apprentice or journey worker class or program that is sponsored by a local union affiliated with the United Association. Course registration will be available online at https://uanet.org.

Official registration for the program will be completed during check-in on Saturday, August 8th, in the lobby of the Morris J. Lawrence Building at Washtenaw Community College, 4800 East Huron River Drive, Ann Arbor, Michigan 48105.

UA Bookstore

For educational material purchases:

International Pipe Trades Joint Training Committee
Bookstore
687-B Commerce Drive
Upper Marlboro, MD 20774
Telephone: 301-218-1241
Fax: 301-218-8961
E-Mail: iptbookstore@uanet.org
https://shop.iptbookstore.com

Safety Requirements

Students must bring their own welding hood, gloves and jackets. These items will not be supplied. Safety equipment and protective clothing is required for all shop classes. Safety requirements will be strictly enforced. Any student who fails to meet safety requirements will be removed from class.

1. **Eye and Face Protection (OSHA-1926 1926.102)**
   Goggles or spectacles conforming to ANSI Z87.1-1968 shall be used as primary protection. Safety glasses will be required in all shop classes.
2. **Face Shields**
   Face shields shall be used as secondary protection when the faculty instructor requires it.
3. **Welding Shields**
   Welding shields and head covering must meet industry standards and be approved by the faculty instructor. You must bring welding hoods for welding classes.
4. **Hand Protection**
   Appropriate gloves must be worn when doing hot work or working with sharps as approved by the faculty instructor. You must bring gloves for welding classes.
5. **Arms and Torso Protection**
   Welders must use appropriate protective jackets, sleeves, and/or other protective gear. All protective gear must be approved by the faculty instructor. Long sleeve shirts will be required in all shop classes. You must bring welding jackets for classes.
6. **Foot Protection**
   Work shoes must be made of leather or other similarly strong materials, and are required in all shop classes (No sneakers or sandals will be permitted).
7. **Leg Protection**
   Long pants will be required in all shop classes (No shorts will be permitted).

Course Short List

NEW CLASSES FOR 2015

COORDINATOR, DIRECTOR, OR JOINT APPRENTICESHIP COMMITTEE MEMBER COURSES – 20-HOUR

PROFESSIONAL COURSES – 20-HOUR

APPLIED AND TECHNICAL COURSES – 20-HOUR

APPLIED AND TECHNICAL COURSES – 40-HOUR

APPLIED AND TECHNICAL COURSES – 20-HOUR
OSU WELD ENGINEERING CERTIFICATE PROGRAM

APPLIED AND TECHNICAL COURSES – 20-HOUR
FERRIS STATE UNIVERISTY CERTIFICATE PROGRAM

(p) Prerequisite

Course Reference List

* Prerequisite

ITP Grant Opportunities

2015 Instructor Training Program Grant Opportunities

Textbooks

The ITF will cover the cost of the required textbooks, including the cost of any required DVD set that is required for a course that an instructor is attending. This grant only covers the textbook or DVDs that are required for the class. Please note that the Customer Service videos are limited to one set per local.

Student Grant

The same grant guidelines will be in place as last year (pre-registration, instructors must attend all classes and a $3,800 per person maximum). Please follow the grant guidance letter being distributed to the JATC's.

One instructor would be eligible to attend under each of the following grant guidelines:

- A first-time instructor who has not attended ITP before
- A previous graduate of the ITP (no minimum year requirement as was in place last year)
- An instructor attending ITP (no requirements)
- ADDITIONAL OPPORTUNITY: If a local training program registers one more attendee than they sent to ITP in 2014, and this individual is also a first-time instructor who is currently working in the industry, the local training program will be eligible for a fourth ITP grant.

Course Equipment/Material Grant

Grant from the ITF for the following courses:

236 *Adult Basic Life Support/First Aid*

Adult and Child AMBU, Manikin, Cardiac AED Trainer, Automated External Defibrillator, and a set of two training DVDs

298 *Interactive Teaching Tools*

Laptop computer with a rolling case and the Mobi/CPS Kit

328 *ARC Flash Safety*

NFPA 70E arc-flash personal protection kit, which includes coveralls, gloves, leather protectors, safety glasses, hardhat and the carrying bag

336 *HVACR Performance and Compliance (New)*

Fieldpiece Refrigerant Manifold - Fluke Power Quality Meter

470 *OSHA 500*

Duffel bag containing hands-on training materials to use in class, i.e. eye, ear, head and hand protection items

472 *Confined Space – Train the Trainer*

Air monitoring equipment

The locals will be granted the materials/equipment when the instructor attending these courses successfully completes the course. More than one instructor per local may be permitted in some of the courses; however, granted equipment/materials will be limited to one per local. Locals that were granted the equipment or materials from the ITP in 2013 and 2014 will not be eligible for the equipment.

239 BIM 360 Field and Glue

Prerequisite: A working knowledge of personal computers. Course 233, Introduction to Building Information Modeling (BIM), preferred.

This course explores the application of Autodesk BIM 360 software as related to BIM management and piping installation workflows within a cloud-based collaborative environment. Utilizing the two software products that comprise BIM 360, BIM 360 Field, and BIM 360 Glue, students will learn methods to streamline BIM project workflows, access project data anytime and anywhere, utilize cloud-based information reporting, and deliver critical information to field personnel in real time. Topics include: application of mobile (tablet) technologies to piping installation workflows, cloud-based collaboration, BIM management applications, cloud-based model access and coordination processes, and the downloading, installation, and activation of Autodesk BIM 360 software.

240 Basic Electricity

This course will cover and present best teaching methods for safely using and working with electricity on the jobsite. Electrical theory will be covered to promote the understanding of voltage, amperage, and resistance with specific emphasis on the safe use of power tools on the job. Ground fault circuits (GFCI), circuit breakers, fuses, and circuit capacities will be discussed, along with the proper use of electrical multi-meters for basic electrical readings. The curriculum will be offered through presentations, hands-on, and supplemental learning software. The UA instructors will also be introduced to the UA software developed for use on Blackboard. The UA instructors will learn how to customize UA Circuit Builder software for enhancing the learning experience at their local training center.

243 HVACR Basic Electricity

This course is for UA instructors in the service sector who have electrical knowledge and experience with electrical systems and controls. A review of electrical theory will be covered to promote an understanding of voltage, amperage, and resistance with specific emphasis on the safe use of troubleshooting tools on the job. HVACR control circuits will be covered in detail with real-world examples demonstrated. The curriculum will be offered through presentations, hands-on, and supplemental learning software. The UA instructors will also be introduced to the UA software developed for use on Blackboard and will learn how to customize UA HVACR Service and Circuit Builder software for enhancing the learning experience at their local training center.

246 Instructor Skills Omnibus Course

This course is designed to provide instructors with a foundation of teaching techniques using various methods essential for the successful delivery of any UA program. This will include topics such as Essential Skills for Learning, Conflict Resolution, Time Management, Learning Styles, and Dealing with Students with Learning Challenges. Understanding the issues around these topics will help an instructor deal with the evolving nature of the education process. This will also provide a foundation of skills every instructor needs to deliver effective programs to a variety of students and to achieve the highest success rate in the classroom. Students will be provided with the information for the course at time of delivery. There are no prerequisite texts required.

257 Teaching Hydronic Heating and Cooling

This course is for UA instructors who presently teach, or are planning to teach hydronic heating and cooling systems. Through a combination of PowerPoint© presentations, lecture, and group discussion, this class will familiarize the student instructors with the fundamentals of hydronic heating and cooling systems. The class will cover low-pressure water boilers, heat exchangers, chillers and condensers, water source heat pump systems, cooling towers, system controls and accessories, hydronic control valves, valve arrangement, piping system layouts, piping practices, centrifugal pumps, pump curves, system curves, primary–secondary pumping, flow balancing (elementary), venting, zoning, expansion/compression tanks, fluid flow principles, and heat transfer calculations.

269 Victaulic Firelock Fire Protection Valves

Participants will gain a complete working knowledge of the installation, troubleshooting, and repair of Victaulic FireLock Protection Valves, and will develop the essential skills to train UA apprentices and journey workers in these subjects. Victaulic will issue certifications for those who successfully complete the course.

282 Ammonia Piping, Service, and Maintenance

The objective of this course is to provide the UA instructors with an introduction to ammonia refrigeration systems and will contain the information needed to deliver a course on the Fundamentals of Ammonia Refrigeration Systems at their local training centers. This course further provides the local UA instructors with the information needed to integrate ammonia refrigeration system fundamentals into their existing Refrigeration and Air Conditioning programs. Analysis of ammonia refrigeration system flow will assist UA Journeypersons with an understanding of system layout and piping to provide workers with the understanding required if they are dispatched to an ammonia installation job. A comparison of the vapor compression refrigeration cycle employed for halocarbon-based refrigerants will be compared to a typical larger ammonia refrigeration system used today.

289 Innovative Welding Techniques

Industry is constantly in the process of improving the quality of welding in both construction and fabrication. This course is specifically designed for welder/instructors who are seeking to improve their pipe welding skills utilizing the SMAW and GTAW welding processes. Students will be shown tried-and-true welding techniques by highly experienced UA welding instructors who know how to get the job done. All enrolling students should possess the fundamental welding skills in the major processes before they choose to enroll in the course. Individuals taking this course should bring three or more personal welding techniques they may use in the SMAW and GTAW processes. These topics will be used for discussion points and demonstrations. Enrollment is limited to local union welding instructors who hold current SMAW/GTAW UA Weld Certifications. **Students must bring their own welding hoods, welding jackets, welding gloves, and wear proper protective clothing and foot protection.**

313 Operation and Set Up of the Fire Protection Training Trailer

UA student instructors participating in this course will learn how to present classes utilizing the trainers contained within the UA Fire Protection training trailer as they apply to the fire protection equipment installed and serviced by UA members. Instructors will learn the best practices for teaching with the training trailer, along with proper trailer set up and repacking, including water connections, set up, and draining. They will learn the operation of the onboard generator and audio video systems. The course will also include equipment safety of the fuel and electrical systems. The training trailer event scheduling and transportation policies will also be covered. Safety shoes are mandatory.

317 Variable Refrigerant Flow-The CITY MULTI Service Course (VRF) (Revised)

The CITY MULTI Service Course provides participants with an in-depth understanding of the technologies used in the CITY MULTI system. Additionally, an in-depth functional study of the system will be conducted and there will be a thorough discussion over the theories associated with properly applying, installing, commissioning, and troubleshooting CITY MULTI systems. Concepts and theory will be discussed in the classroom and reinforced through practical, hands-on exercises. The instructor participants will install static displays and fully functional CITY MULTI systems to learn system analysis. In addition, they will complete practical troubleshooting exercises. Laptops are required as participants will install and use Mitsubishi-provided software in the course.

Target Audience: This course is recommended for installers, start up and service personnel for CITY MULTI systems, who possess intermediate or greater HVACR technical skills and who have experience with Mr. Slim equipment.

318 Daikin VRF Systems

VRV Install and Commissioning class covers best practices for installation starting with piping, flaring, system pressure test and evacuation, and charging methods. The course then covers:

VRV Product and Technology - The VRV products that the technician in the field will encounter, how to identify them, and the basic technology that allows VRV Heat Recovery to be the most efficient commercial system on the market. VRV Basic Install - Explains the equipment and the installation requirements for 12 different indoor fan coils, including wiring, piping, and condensate management, as well as the outdoor units single and manifolded.

VRV Remote Control Installation - Covers control installation, communication, field settings, group addressing, and setback programming. VRV System Commissioning - The field guide for the technician that contains the step-by-step commissioning checklist, most common field settings for indoor units and outdoor units, charging calculations, charging procedures, test operation, and basic installation troubleshooting. This course will include a notebook for note taking and the printed copy of the commissioning guide, as well as electronic versions of the presentations and the IOM and service manuals. Electronic simulation software will be demonstrated in class and will be available for purchase. Students will need colored pencils and pen for note taking. The presentations will be available as a PDF. If the student has Adobe Reader X or later version, notes can be taken on a personal laptop.

327 VFD Fundamentals and Commissioning

Prerequisite: Instructor should be a journeyperson HVACR technician with general knowledge of HVACR systems and equipment.

The objective of this course is to give the UA HVACR instructor the knowledge and tools necessary to create his or her own variable frequency drive class/curriculum at the local level using a 1/3 lecture to 2/3 hands-on approach. UA instructors will be able to identify the components and have basic troubleshooting knowledge of variable frequency drives. Instructors will be able to use the individual VFD literature provided to do basic programming and start up of multiple variable frequency drives. Class will include both lecture and practical hands-on. During lecture period, topics such as common application, usage, and the interface of VFD with HVACR equipment will be discussed. During the hands-on period, instructors will become familiar with multiple industry standard variable frequency drives that will include:

1. Common practices of control wiring on VFD
2. Common programming of VFD
3. Differences between VFD manufacturers

Class reading materials will include literature hand-outs taken from specific VFD operation and service manuals.

329 Pump Service and Maintenance

Buildings of all types and sizes use pumps for fire protection, heating, cooling, and for domestic water distribution. All pumps from the smallest and simplest to the largest and most complex are constructed and operated in accordance with certain basic principles. This course will give the UA craftsman an understanding of pump selection and pump performance and will describe operating characteristics. Proper servicing techniques will be discussed and demonstrated, along with a hands-on lab for the participants. Repair procedures will be outlined in a step-by-step fashion including manufacturer recommended best practices. The instructors who attend this course will take home curriculum to create a similar class for their locals.

330 Service and Maintenance of Cooling Towers

The objective of a mechanical refrigeration system is to remove heat from a space or product and to reflect that heat to the environment in some acceptable manner. Cooling towers are frequently used to reflect heat from mechanical refrigeration and air-conditioning systems in many commercial buildings, hospitals, and universities. Cooling towers, because of their mode of operation, can create ideal conditions for microbial growth. The objective of this course is to provide the UA instructor with the information necessary to teach apprentices and journeymen the principles of Cooling Tower Service and Maintenance. Course topics will include: Safety, Tower Configuration, Water Quality, Inspection Procedures, Repair Procedures, and Tower Retrofit Guidelines. The course will consist of lectures, presentations, and a site visit to the WCC cooling tower.

335 Principles of Absorption Chiller Systems

Absorption chillers use heat energy directly to chill the circulating medium, usually water. The absorption cycle uses lithium bromide (absorbent) and water (refrigerant). Absorption chillers are usually classified according to the type of heat energy used as the input and whether it is a single or two-stage generator design. This course will describe the basic components in a simple absorption system and its function in the refrigeration cycle. The participant will learn to understand the terminology associated with absorption systems. Component functions will be stressed in order to give instructors a working knowledge of unit design, operation, start up and troubleshooting. In addition, the operating characteristics of various machines will be discussed with an explanation of how the coefficient of performance (COP) is used in equipment selection. ASHRAE 15 machine room safety requirements will be offered in the materials.

336 HVACR Performance and Compliance

Prerequisite: GPRO and UA HVACR STAR

This course is designed to accumulate and evaluate practical data related to energy usage of mechanical equipment. The purpose of the course is to learn the ability to confirm, through functional performance testing of mechanical equipment, that the relevant equipment has been installed properly and is operating as designed and specified. Functional performance tests and checklists are developed in accordance with the acceptance testing standards. Acceptance testing is required by many state energy codes to ensure that equipment, controls, and systems operate as required. The instructor will also learn to utilize the EPA Building Portfolio Manager to track and assess energy and water consumption for commercial buildings. Upon completion, the instructor will be able to formulate reports required for document compliance. The students will audit a 5,000 sq. ft. building on campus during the course and present their findings to the class.

347 Bolted Connections Training Course (Revised)

This course will train personnel on the technological and practical applications of assembling bolted flanged pipe joints in accordance with the ASME PCC-1 Codebook on the Guidelines for Pressure Boundary Bolted Flange Joint Assembly. The course will have a practical "hands-on" workshop on Pre-Tensioning Techniques using manual and powered Torque Wrenches to perform: Turn of Nut, Calibrated Wrench, Tension Controlled (TC) fasteners, and Direct Tension Indicator (DTI) Washers, and use of a Skidmore Bolt Tension Calibrator. Participants will also gain an overview of the latest developments on gasketed joint assembly, torque factors, bolting patterns, gasket behavior, tightness, and gasket selection.

348 Ultrasonic Thickness Measurement Technician Training Course (Revised)

This course will provide theory and practical training to provide the student with an understanding of ultrasonic thickness measurement principles and its actual applications. The course will cover the basic skills necessary to set up and operate an Ultrasonic A-scan Thickness Measurement Instrument, which is typically used in industry to determine material thicknesses due to erosion and corrosion of piping. At the conclusion of the course, an ultrasonic thickness testing examination will be proctored by the Non-Destructive Testing Institute, which will allow the students to become certified as Ultrasonic Thickness Measurement Technicians.

391 Utilizing Jobsite Technology

How jobsites function today is rapidly changing from the jobsites of the past. The incorporation of technology has become commonplace and continues to increase with the introduction of new equipment. This course is designed to provide attendees with an overview of the new equipment and technology that is changing the way projects are being done. Attendees will gain an understanding of how new equipment is being utilized from the job trailer to the jobsite. Some of the new equipment that will be shown and discussed include: BIM, CAD, Field and Glue 360 on iPads, 3-D Laser Scanners and Robotic Layout devices. Additionally, there will be demonstrations of new technology, such as Virtual Reality Eyewear and Augmented Reality, and how they are being utilized will be discussed. This will give the attendees a better understanding of how this technology is changing our jobsites. Participants will see how even the standard "gang box" is being updated to incorporate new technology. This class will not only have discussion and demonstrations of the new equipment and technology, but will also allow participants many opportunities for "hands-on" sessions with this equipment. Participants wanting to see the latest in technology that will be utilized on our jobsites of tomorrow are encouraged to participate in this class.

393 Your Role in Lean Construction

What is "Lean Construction?" How does it affect me on the jobsite? "If a project is using Lean Construction, does it mean less work hours?" These are some of the many questions UA members might have regarding Lean Construction and its impact on the work and worker. Is it a threat or an opportunity?

In construction, waste happens often when the workforce has to go on a treasure hunt looking for things like materials, tools, equipment or information, or has to wait because of a material shortage or trade stacking. Does this sound familiar? The concept of Lean Construction addresses many challenges that happen on the jobsite. End-users and general contractors have seen the value of Lean Construction. You will be seeing an increase of construction sites incorporating Lean Construction. It is paramount that the UA's workforce has an understanding of the Lean concept and the ability to apply it effectively. This workshop will provide answers about Lean construction and why the UA's strategy is to be a leader in embracing Lean. Attendees will see how applying the simple tools and concepts will increase productivity. Additional discussion will center on where Lean Construction has been utilized successfully on UA projects, and its potential to lead to additional work. This is a very important concept that the UA's contractors and owners are embracing. This workshop is intended to provide an introduction to Lean Construction, and explain how it can be taught and incorporated into the training program at your local.

650 Commercial HVACR System Design and Equipment Selection

This first course of a three-course certificate program will focus on the selection, application, and layout of equipment and systems for commercial buildings. Given building architectural plans, codes and standards, and the owner's requirements, participants will select an appropriate HVACR system and produce mechanical schedules and specifications. The student will gain an increased understanding of the major mechanical system components, such as chillers, boilers, cooling towers, and air handling units. In addition, UA technicians will learn to evaluate architectural considerations, system configurations, and the economics in relationship to a building's first cost and operating cost. Students must bring a laptop.

711 Veterans in Apprenticeships

The Veterans in Apprenticeship workshop has been created to provide UA Training Directors/Coordinators with the information and resources to ensure all military veteran apprentices are successful in their pursuit of a career with the United Association. This workshop will include an explanation of the value that U.S. military veterans bring to the UA apprenticeship programs. Students will receive an overview of the Veterans in Piping® (VIP)® program to include: the interview process, curriculum, VIP graduate's placement procedures, VIP Task Force objectives, and the VIP website.

In addition, there will be an explanation of the structure of the Veterans' Administration (VA) and the Department of Defense (DOD). Participants will learn about Montgomery and post 9/11 GI Bill benefits, including their role in assisting VIP graduates and other veterans whom are claiming these benefits throughout the apprenticeship program. Participants will also become familiar with the DD214 form, and what a Military Occupational Specialty (MOS) means. The program will also provide valuable insight into the signs, symptoms, and treatment of Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI), and will provide resources in regards to what you should do if you suspect an apprentice, who is a veteran, is suffering from one of these conditions. All Training Directors/Coordinators receiving VIP graduates into their programs or who have any veterans in their programs should take this course.

712 Using the Multi-Craft Core Curriculum (MC3)

Part of the responsibilities of running a UA Apprenticeship Training Program involves recruiting potential candidates who would like to have a career in the piping trades industry. In the past, many Apprenticeship Training Programs have had success by recruiting directly from high schools and technical/vocational schools. North America's Building Trades Unions has developed a curriculum called the Multi-Craft Curriculum (MC3) that is being utilized throughout the country in high schools and technical/vocational schools to help prepare students who are interested in careers in the construction trades. This curriculum gives the student an overview of different industry crafts, basic math, OSHA, and an understanding of what it means to be a union member. Those individuals who have taken this course are strong recruiting candidates for the UA. Therefore, it is to our Apprenticeship Training Program's advantage for our members who are involved with this to encourage the high schools and technical/vocational schools in their jurisdictions to incorporate this curriculum into their programs. This course is geared toward the individuals in your apprenticeship programs who have developed a relationship with your high schools and/or technical/vocational schools. The course will assist them in encouraging the schools to adapt this program by giving them an understanding of what it is all about. The course includes how to use the curriculum and what resources are needed to teach it. It will also help guide the UA participants on how to maintain strong, long-lasting relationships with the schools using the program.

Backflow Prevention Assembly Tester Recertification

Prerequisite: Must have a current certification or no more than 6 months past expiration.

Fees are the responsibility of the student. See fee schedule.

UA instructors wanting to update their Backflow Prevention Assembly Tester Certification may sign up for this four-hour, non-credit course, which will provide a review of installation requirements and testing procedures for backflow prevention assemblies. UA instructors who pass a written examination and practical testing of the required assemblies will be recertified for three years. Reciprocation of approved non-ASSE Backflow Prevention Assembly Tester Certifications will be included in the renewal. All reference material will be provided. No textbooks required. Instructors wishing to recertify must provide proof of an approved backflow prevention assembly tester certification.

Date: Saturday, August 8, 2015
Time: 10:00a – 2:00p
Room: OE 156

UA Star Certification/Recertification Exam

Fees are the responsibility of the student. See fee schedule.

This will be an NITC proctored UA STAR CERTIFICATION/RE-CERTIFICATION exam.

Date: Saturday, August 8, 2015
Time: 10:00a – 4:00p
Room: GM 212

Adult Life Support/First Aid Recertification Exam

Fees are the responsibility of the student. See fee schedule.

Date: Saturday, August 8, 2015
Time: 12:00p – 4:00p
Room: GM 332

Authorized Testing Representative (ATR) Visual Acuity Exams

Date: Sunday, August 9, 2015
Time: 5:00p – 5:30p
Room: LA 374

Nine-Year Recertification for CWI®

A minimum of eighty (80) Professional Development Hours (PDHs) must be earned (training received or instruction delivered) during the nine-year certification period, and twenty (20) of the eighty (80) PDHs must be earned in the final three-year period of your nine-year certification period.

Instructors who want to substitute teaching hours for the required PDHs shall submit documentation of the hours of training performed. Such documentation shall include a complete syllabus of subjects taught, a copy of the certificates of attendance or completion issued, the number of students attending, the dates of the training provided, and documentation that the training was a formal offering and not personal coaching, tutoring, or individual instruction delivered to meet job requirements.

A maximum of eighty (80) PDHs are allowed for any one course.

Credit for a particular course may only be granted once in a nine-year period. (Example: a single 40-hour course taught any number of times can only be used to fulfill 40 hours of the 80 hours required for recertification without examination).

Trainers who want to substitute teaching hours for the required PDHs shall submit documentation of the hours of training performed. Such documentation shall include a complete syllabus of subjects taught, a copy of the certificates of attendance or completion issued, the number of students attending, the dates of the training provided, and documentation that the training was a formal offering and not personal coaching, tutoring, or individual instruction delivered to meet job requirements. For more information please visit http://www.aws.org.

Endorsements

You can take an endorsement exam to recertify during the six (6) months prior to your expiration date. Passing one of these exams meets the requirements for recertification. Endorsements require passing a two-hour exam on one of the following:

Endorsements Eligible for Nine-Year Recertification Credit:

AWS D1.1 Structural Steel
AWS D1.2 Structural Aluminum
AWS D1.5 Bridges
AWS D15.1 Railroad
AWS D17.1 Aerospace
API 1104 Pipelines
ASME Section IX, B31.1 and B31.3
Boiler and Pressure Vessel
ASME Section VIII, Div. 1 and Section IX
Boiler and Pressure Vessel
Structural Drawing Reading

***OR* 80 Hours in the Following:**

206 Arc Welding Practical Fundamentals and Theory
213 Applied Metallurgy
247 Piping Codes for Industrial Work
271 Orbital Tube Welding
274 Teaching Oxy-Acetylene Cutting and Welding
275 Teaching Advanced Orbital Welding
276 Teaching Orbital Welding
277 Orbital Wire Feed Welding
279 Machine Cutting, Severing, and Beveling
280 Teaching Aluminum Pipe Welding
280 ASME Section B31.1 Code
286 Teaching Downhill Welding
288 Teaching Shielded Metal Arc Welding
289 Innovative Welding Techniques
290 Teaching Gas Tungsten Arc Welding
295 Radiographic Film Interpretation
346 Wire Feed OrbiMig Welding Systems
347 Bolted Connections Training Course
348 Ultrasonic Thickness Measurement Technician Training Course
353 ASME Section IX Welding Code
355 Quality Control Inspection
356 Teaching Advanced GTAW
358 Advanced Shielded Metal Arc Welding
359 Teaching Advanced GMAW
360 Ultrasonic Thickness Measurement Technician Training Course
390 Authorized Testing Representative Refresher
391 Teaching Methods in Submerged Arc Welding
392 Remote Video Wire Feed
430 Authorized Testing Representative
476 Methods in Teaching Advanced Orbital Welding
477 Certified Wire Feed Machine Orbital Welding
478 Gold Track GTAW – Wire Feed Machine Welding
478 Wire Feed “Remote Video” Welding Systems
480 Radiographic Film Interpretation
482 Teaching Orbital Wire Feed Welding
483 Troubleshooting and Basic Repair of the AMI 207 Orbital Welding Machines
491 Basic Non Destructive Testing
493 AWS-CWI® Preparation Course
494 Heavy Wall Welding, Heat Treat Technician Training and Pipe Joint Machine Overview
600 Principles of Arc Welding Processes, Welder and Weld Process Qualification and Metallurgy NPE through Ohio State University
601 Weld Metallurgy, Defects, and Discontinuities for Process Piping Materials through Ohio State University
602 NDE for Process Piping through Ohio State University

The following courses are limited to Local Union Directors/Coordinators and Joint Apprenticeship Committee (JAC) members.

Requirements for a 120-Hour Coordinator Certificate

Included in this program is a review of the various regulatory changes and fiduciary responsibilities associated with administrating a jointly managed training program affecting our local JACs. The course numbers have changed to reflect these revisions, but all previously earned credit will still apply.

Directors/Coordinators and/or JAC members must successfully complete six (6) of the following courses to earn a 120-hour Coordinator's Certificate. *Designates required courses.

237 Adapting Apprenticeship to the 21st Century Students
510 Public Speaking
520 Labor History and the UA Part One: 1800 to 1920 **OR**
521 Labor History and the UA Part Two: 1920 to Present
705 *Guidelines for Developing Local Apprenticeship Standards **(Previously Course 90)**
706 *Regulatory and Fiduciary Compliance for Training Trust Fund Administration
707 *Best Practices for Operation of a Jointly Managed Training Program **(Previously Course 91)**
708 Apprentice Development Program for Canadian Coordinators
710 Methods in Addressing Barriers to Apprentice Success **(Previously Course 97)**
711 Veterans in Apprenticeships
712 Using the Multi-Craft Core Curriculum (MC3)

237 Adapting Apprenticeship to the 21st Century Students

This course will focus on the generational differences that are being experienced by coordinators, instructors and apprentices in Local Training Centers today. Participants taking this course will share in a roundtable, open discussion format. Most of us are facing challenges, at some level with students who view work ethic, attitude, appearance, punctuality, attendance, finance, communication, cell phones, texting, and technology differently than we do. Presenters from the training industry will discuss problems they are facing and solutions they are using to better communicate with Gen X (born 1965-1979) and Gen Y (born 1980-2000) students. There will also be discussion on how to reach out effectively to the Gen Z (2000-current) future generation. Please plan to share your thoughts and ideas with the group.

Required text for this course: *Y in the Workplace: Managing the "Me First" Generation*

Sec	Location	Instructor
1	SC 316	L. Culver/R. Pack/J. Leen/A. Schroeder
2	SC 316	L. Culver/R. Pack/J. Leen/A. Schroeder

510 Public Speaking

This course is designed to help UA instructors acquire essential speaking and listening skills for the classroom. Class exercises will focus on the delivery of lecture material and conducting demonstrations. Instructors will polish organizational and delivery skills, as well as gain a heightened awareness of the relationship between a speaker and an audience. UA instructors are encouraged to bring materials from classes they are currently teaching as reference for class exercises. Blackboard™ will be used for this course.

Sec	Location	Instructor
1	TI 110	N. Cullin
2	TI 110	N. Cullin
3	TI 108	M. Brooks
4	TI 108	M. Brooks
5	TI 116	K. Shaper
6	TI 116	K. Shaper
7	TI 118	A. Johnson
8	TI 118	A. Johnson
9	TI 137	A. Fournier
10	TI 137	A. Fournier

520 Labor History and the UA Part One: 1800 to 1920

Labor History and the UA is a class covering the struggles of the labor movement from 1800 to 1920. This class will cover events and notable people through time who have played an important role in labor history.

Required text for this course: *The Rise of the United Association (Martin Segal)*

Sec	Location	Instructor
1	LA 261	T. Willson
2	LA 261	T. Willson

521 Labor History and the UA Part Two: 1920 to the Present

Labor History and the UA Part Two is a continuation of Labor History and the UA Part One. This class will cover various labor historical and United Association events throughout the 20th century, and how they have had an impact on society. UA instructors will be using Blackboard™ during this course.

Required text for this course: *Labor in America (Melvyn Dubosfky and Foster Reah Dulles); Skilled Hands, Strong Spirits (Grace Palladino); The United Association 1924-1989 (Barbara Griffith); DVD published by AFL-CIO Building Construction Trades Department "A Century of Leadership - Skilled Hands Strong Spirits 100 Year Anniversary" (1908 - 2008); Triangle Fire DVD (PBS, 2011); At the River I Stand DVD (1993) (recommended, but not required)*

Sec	Location	Instructor
1	LA 274	R. Manley
2	LA 274	R. Manley

705 Guidelines for Developing Local Apprenticeship Standards

Prerequisite: The course is limited to Local Union Training Directors/Coordinators and Joint Apprenticeship Committee/Joint Apprenticeship Training Committee Members. Training Directors/Coordinators must have a uanet.org email address. It is recommended that participants bring a laptop or tablet computer. Students are required to bring a copy of their local union apprenticeship standards.

Training Directors/Coordinators and Committee Members will receive information on the history and value of registered apprenticeship and the operation of a local United Association Joint Training Program. The course covers the United Association National Guidelines for Apprenticeship Standards developed by the International Pipe Trades Joint Training Committee. Topics will include on-the-job learning, the duties of Training Directors/Coordinators and legislation concerning UA training programs.

Sec	Location	Instructor
1	GM 318	A. Clinedinst
2	GM 318	A. Clinedinst

706 Regulatory and Fiduciary Compliance for Training Trust Fund Administration

Prerequisites: The course is limited to Local Union Training Directors/Coordinators and Joint Apprenticeship Committee/Joint Apprenticeship Training Committee Members. Students are recommended to take this along with course 705 if they have not taken course 705 (Previously Course 90) in the past.

Participants in this course will receive information on statutory and regulatory compliance, as well as other legal matters pertaining to the administration of a training trust fund. This includes compliance with Employee Retirement Income Security Act (ERISA) provisions, tax audit awareness, Department of Labor investigations, and training trust fund policy development. The course focuses on fiduciary responsibility, as well as insurance requirements and employment law.

Sec	Location	Instructor
1	LA 275	C. Cimino/Legal and Industry Representatives
2	LA 275	C. Cimino/Legal and Industry Representatives

707 Best Practices for Operation of a Jointly Managed Training Program

Prerequisite: Completion of Course 705 (Previously Course 90)

Course 707's objective is to provide background knowledge and updated information to Local Union Coordinators, Directors, and Joint Apprenticeship Training Committee members. Through lecture and discussion, participants will identify best practices to administer today's dynamic local training programs and provide policy and guidance to improve local training program outcomes. The course will provide updates on industry trends, laws affecting training programs, and will offer guidelines for developing local standards of apprenticeship, curriculum, and on-the-job learning and certification programs. Students need to bring to class a copy of their Program's Standards and locally adopted polices for reference in completing course work and for review in class.

Sec	Location	Instructor
1	SC 310	R. Cross
2	SC 310	R. Cross

708 Apprentice Development Program for Canadian Coordinators

This course will provide an overview of the requirements for Local Union Apprentice Coordinators, both new and existing, to ensure that the participants understand the role of the Training Director/Training Coordinator for a Local Union Training Department. It will consist of lecture and discussion, and includes participants developing content for programs for their local union under the guidelines set out by the UA Canadian Office, District 6.

Sec	Location	Instructor
1	BE 270	L. Slaney/M. Battye

710 Addressing Barriers to Apprentice Success

This course covers best practices for handling common problems that affect apprentices and prevent their successful completion of a local joint training program. Issues such as substance abuse, harassment, and emotional problems, to name just a few, will be examined. Participants will develop communication skills and will learn apprentice success strategies that will assist them with decreasing resistance from certain students, ultimately motivating them to achieve their full potential.

Sec	Location	Instructor
1	GM 334	B. Spitsbergen
2	GM 334	B. Spitsbergen

711 Veterans in Apprenticeships (New)

The Veterans in Apprenticeship course has been created to provide UA Training Directors/Coordinators with the information and resources to ensure all military veteran apprentices are successful in their pursuit of a career with the United Association. This workshop will include an explanation of the value that U.S. military veterans bring to the UA apprenticeship programs. Students will receive an overview of the Veterans in Piping® (VIP)® program to include: the interview process, curriculum, VIP graduate's placement procedures, VIP Task Force objectives, and the VIP website.

In addition, there will be an explanation of the structure of the Veterans' Administration (VA) and the Department of Defense (DOD). Participants will learn about Montgomery and post 9/11 GI Bill benefits, including their role in assisting VIP graduates and other veterans whom are claiming these benefits throughout the apprenticeship program. Participants will also become familiar with the DD214 form, and what a Military Occupational Specialty (MOS) means. The program will also provide valuable insight into the signs, symptoms, and treatment of Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI), and will provide resources in regards to what you should do if you suspect an apprentice, who is a veteran, is suffering from one of these conditions. All Training Directors/Coordinators receiving VIP graduates into their programs or who have any veterans in their programs should take this course.

Sec	Location	Instructor
1	LA 272	D. Porter
2	LA 272	D. Porter

712 Using the Multi-Craft Core Curriculum (MC3) (New)

Part of the responsibilities of running a UA Apprenticeship Training Program involves recruiting potential candidates who would like to have a career in the piping trades industry. In the past, many Apprenticeship Training Programs have had success by recruiting directly from high schools and technical/vocational schools. North America's Building Trades Unions has developed a curriculum called the Multi-Craft Curriculum (MC3) that is being utilized throughout the country in high schools and technical/vocational schools to help prepare students who are interested in careers in the construction trades. This curriculum gives the student an overview of different industry crafts, basic math, OSHA, and an understanding of what it means to be a union member. Those individuals who have taken this course are strong recruiting candidates for the UA. Therefore, it is to our Apprenticeship Training Program's advantage for UA representatives to encourage the high schools and technical/vocational schools in their jurisdictions to incorporate this curriculum into their programs. This course is geared toward the individuals in your apprenticeship programs who have developed a relationship with your high schools and/or technical/vocational schools. The course will assist them in encouraging the schools to adapt this program by giving them an understanding of what it is all about. The course includes how to use the curriculum and what resources are needed to teach it. It will also help guide the UA participants on how to maintain strong, long-lasting relationships with the schools using the program.

Sec	Location	Instructor
1	LA 263	T. Kriger/R. Pleasure
2	LA 263	T. Kriger/R. Pleasure

Required Professional Courses—Twenty Hours/Four Hours Per Day

Requirements for the 200-Hour Instructor Training Program (ITP)

UA instructors must successfully complete the following courses in order to earn a certificate as a *"Certified Instructor of Journeyworkers and Apprentices in the Plumbing and Pipe Fitting Industry."*

101 Planning, Teaching, and Assessing Effective Lessons: Beginner
102 Planning, Teaching, and Assessing Effective Lessons: Intermediate
510 Public Speaking
103 Planning, Teaching, and Assessing Effective Lessons: Advanced
104 Course Planning and Problem Solving
***Plus* five 20-hour elective Courses**

Note: Courses 705, 706, 707, 708, 710, 711, and 712 are ineligible as instructor electives, and credits will not go toward program completion.

Suggested course load for completion in five years:

The new versions of 101-104 provide an experiential approach for learning important classroom skills. The course instructors first model each of the planning, teaching, and assessment strategies, so the UA instructor can experience each strategy from the student's point of view. UA instructors will then have a chance to practice the strategies in class and plan how to use them in their own teaching.

101 Planning, Teaching, and Assessing Effective Lessons: Beginner

Prerequisite - Computer Skills Evaluation and/or Basic Computer Skills Modules

Before being registered into 101, students must successfully complete a short pre-course assessment on Blackboard™ about basic computer knowledge and navigation. The assessment is designed to ensure students have the abilities for succeeding in all of their professional development courses. If students are unable to complete the assessment's requirements, they may choose to improve their abilities by working on further learning modules within the same Blackboard™ site. Upon completing the modules, they may try to complete the assessment once more, which will allow them to register for 101.

This course teaches how to structure classroom lessons to support adult learning. An understanding of how adults learn, how to work with different adult learning styles, and how to create a class climate that promotes learning is developed. The basics of planning and assessing lessons, creating lesson plans, and informal assessments for use in teaching are stressed. Bring the textbooks, lesson plans, quizzes, and tests for a course that will be taught at the local. If an instructor does not have a specific teaching assignment, work with the local union training coordinator to select a course that will be taught in the future and bring those materials. The participant must also have a valid email address.

Reflective Teaching Assignments (RTAs)

On returning to the local union training center, the instructor will complete a series of Reflective Teaching Assignments (RTAs). In these assignments, the instructor will reflect on the use of the planning, teaching, and the use of assessment skills from 101. These are required assignments and must be submitted to the online portfolio.

Sec	Location	Instructor
1	TI 112	C. Foster
2	TI 112	C. Foster
3	TI 131	B. Town
4	TI 131	B. Town
5	TI 114	K. Paterson
6	TI 114	K. Paterson
7	GM 207	C. Johnson
8	GM 207	C. Johnson
9	BE 250	E. Smith
10	BE 250	E. Smith
11	TI 129	J. Kissel
12	TI 129	J. Kissel
13	TI 247	S. Rogers
14	TI 247	S. Rogers
15	BE 260	B. Foran
16	BE 260	B. Foran

102 Planning, Teaching, and Assessing Effective Lessons: Intermediate

This course expands on what was taught in 101 and practiced by UA instructors while teaching their local union classes. Each UA instructor will increase his or her skillset while focusing on Active Learning Techniques. Reflective Teaching Assignments (RTA) preparation will require practicing writing objectives, designing and describing instructional activity, and assessing learning. Included in the course are interactive presentations, small group work, the use of interactive visual supports (charts, diagrams, and pictorial presentations), and will include review sheets to assess knowledge and its application, as well as professional self-reflection. Instructors should also bring course materials for a course that they expect to teach following 102.

Reflective Teaching Assignments (RTAs)

As with 101, upon returning to the local union training center, the instructor will complete the planning, teaching, and will utilize the assessment skills from 102 by teaching two classes and writing a short assessment, noting changes that were made by using RTAs. These are required assignments and must be submitted to the online portfolio.

Sec	Location	Instructor
1	BE 172	P. Shafer-Brown
2	BE 172	P. Shafer-Brown
3	BE 170	R. Brown
4	BE 170	R. Brown
5	BE 158	E. Shelton
6	BE 158	E. Shelton
7	BE 171	J. Shuldin
8	BE 171	J. Shuldin
9	BE 174	A. Garcia
10	BE 174	A. Garcia
11	BE 150	M. Ciarivino
12	BE 150	M. Ciarivino
13	BE 140	C. Sparklin
14	BE 140	C. Sparklin

510 Public Speaking

This course is designed to help UA instructors acquire essential speaking and listening skills for the classroom. Class exercises will focus on the delivery of lecture material and conducting demonstrations. Instructors will polish organizational and delivery skills, as well as gain a heightened awareness of the relationship between a speaker and an audience. UA instructors are encouraged to bring materials from classes they are currently teaching as references for class exercises. Blackboard™ will be used for this course.

Sec	Location	Instructor
1	TI 110	N. Cullin
2	TI 110	N. Cullin
3	TI 108	M. Brooks
4	TI 108	M. Brooks
5	TI 116	K. Shaper
6	TI 116	K. Shaper
7	TI 118	A. Johnson
8	TI 118	A. Johnson
9	TI 137	A. Fournier
10	TI 137	A. Fournier

103 Planning, Teaching, and Assessing Effective Lessons: Advanced

This course builds on the lessons and skills learned in 102 and practiced in the RTAs. Instructors will focus on developing reading and video guides as a way to expand their knowledge of lesson planning. Instructors will also learn how to ask questions to get students involved in discussion, how to support learning of large amounts of information (such as codes), and how to get their students to participate actively in classes. The Instructor will continue to practice using technology in the classroom and by designing in-depth learning assessments. As in 101 and 102, instructors should leave this course with specific lesson plans and assessments to use in teaching at their local unions. Instructors should also bring course materials for a course they expect to teach.

Reflective Teaching Assignments (RTAs)

As with previous RTAs, upon returning to the local union training center, the instructor will be expected to demonstrate the specific skills in teaching and assessment from 103 and will be asked to write a short assessment, noting changes. These are required assignments and must be submitted to the online portfolio.

Sec	Location	Instructor
1	GM 313	D. Ensch
2	GM 313	D. Ensch
3	GM 323	D. Samuels
4	GM 323	D. Samuels
5	GM 317	J. Klapper
6	GM 317	J. Klapper
7	GM 316	K. Cundiff
8	GM 316	K. Cundiff
9	GM 315	J. Klapper
10	GM 315	J. Klapper
11	GM 327	M. Gore
12	GM 327	M. Gore

104 Course Planning and Problem Solving

In this course, the focus is shifted from teaching individual classes to designing an entire course. Instructors will learn how to plan a course systematically using a situational analysis, identifying course outcomes and objectives, and organizing and sequencing a course. In addition, instructors will develop an assessment plan, design appropriate rubrics and prepare a course syllabus. Instructors will also identify problems and challenges in teaching their courses and maintaining their programs. They will use an eight-step problem solving model to develop action plans to address these. Bring course materials (syllabus, textbook, lesson plans, quizzes, exams) for a course that needs to be revised. If the local wants to develop a new course, bring materials needed to form the basis for the course. These materials are essential to the classwork in 104. There are no RTA's following 104.

Sec	Location	Instructor
1	LA 161	J. Pawloski
2	LA 161	J. Pawloski
3	LA 368	E. Folsom
4	LA 368	E. Folsom
5	LA 340	R. Rader
6	LA 340	R. Rader
7	LA 352	M. Dolan
8	LA 352	M. Dolan

202 Methods in Teaching Trade Related Trigonometry

This course is designed to prepare the UA instructor teaching first-year apprentices and journey workers trade related trigonometry applications. The UA instructor will learn: basic trigonometry functions, principles of a right triangle, Pythagorean Theorem, rolling offsets (including fitting cut-down/degree of roll), equal spread offsets, and miter joints. The information from this class applies to other courses, including: Pipe Fabrication, Pipe Layout, and Tube Bending and Optical Survey. The majority of class time will consist of in-class assignments. Teaching techniques will be addressed and problematic areas discussed. Course curriculum comes complete with: Assignments, Quizzes and Grading Spreadsheet (with weighted averaging). This course is formatted for Microsoft Excel®. There will be class time devoted to learning the basic steps of Excel in order to facilitate maximum use of the program.

Required text for this course: *Preliminary Related Mathematics Manual (R/15); Piping Handbook and Offset Formulas*

Sec	Location	Instructor
1	GM 005	M. Mokler/A. Vanbergen

203 Methods in Teaching Pipe Trades Applied Mathematics

This course is designed to prepare the UA instructor for teaching pipe trades mathematics to apprentices and journey workers. It will help instructors learn how to teach pipe trades math and will also serve as a refresher course on subjects, such as offsets, metric systems, and calculators. Class time will consist of daily lectures and discussions on topics like teaching styles, testing and exams, and applying mathematics to the pipefitting industry.

Required text for this course: *Related Mathematics Manual with CD (R/02); Related Mathematics Instructor CD; Preliminary Related Mathematics Manual (R/15); Piping Handbook and Offset Formulas*

Sec	Location	Instructor
1	GM 205	C. Davis

206 Arc Welding Practical Fundamentals and Theory

Prerequisite: Knowledge of welding; Hold a weld certification

UA instructors will gain knowledge in arc welding techniques and practical applications used to develop welder training programs specific to our industry. In this classroom setting, instructors will program live welding equipment used for production welding and performance qualifications. Instructors will see the importance of visual training aids while teaching a hands-on course. Topics covered: SMAW, GTAW, GMAW, FCAW, welding electrode AWS classifications, F numbers, shielding gases, process definitions, theory, safety, process selection, consumable selection, storage, and handling. This is not a shop class. No actual welding will be done.

Sec	Location	Instructor
1	OE 105	M. Wall/Lincoln Electric
2	OE 105	M. Wall/Lincoln Electric

207 Copper Piping Systems, Advanced Installations, Specialized Design, and Safe Operation

Copper and copper alloy piping is important material for the pipe trades. The success of copper piping systems is dependent on proper system design, installation, and operation. This course will provide the instructional tools and information necessary for UA instructors to teach apprentices and journey workers how to deliver high-quality copper systems. The course will focus on teaching methods for both classroom and shop settings. Experts in the field of copper and copper alloys will discuss and demonstrate procedures for UA instructors to use in delivering training to apprentices and journey workers. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Soldering and Brazing Manual (R/06); Soldering and Brazing Instructor CD*

Sec	Location	Instructor
1	OE 148	D. Powell/R. Wieting/G. Shimmel
2	OE 148	D. Powell/R. Wieting/G. Shimmel

209 Methods in Teaching Related Science

The objective of this course is to apply scientific principles to the pipefitting trade through demonstrations, experiments, and discussions. Topics include: Properties and Characteristics of Water and Steam, Hydraulics and Pneumatics, Mechanics, Metals, Alloys, Synthetics, and Corrosion. Additional objectives are to assist instructors with ideas for their classrooms and to create a parallel understanding for plumbing, pipefitting, and HVACR sciences.

Required text for this course: *Related Science Manual with CD (R/01); Related Science Instructor CD*

Sec	Location	Instructor
1	LA 305	C. Davis/K. Askam

210 Methods in Teaching Drawing Interpretation and Plan Reading

This course is designed to help UA instructors develop and enhance their teaching skills in drawing interpretation. The class will mainly focus on understanding the basics of plan and elevation drawings, as well as developing grading criteria and exceeding time length for each assignment.

Required text for this course: *Drawing Interpretation and Plan Reading Set (R/00); Drawing Interpretation Instructor CD*

Sec	Location	Instructor
1	LA 256	J. Robinson
2	LA 256	J. Robinson

Sec	Location	Instructor
1	BE 280	J. Withrow
2	BE 280	J. Withrow

213 Applied Metallurgy

This course introduces and explains properties and characteristics of metals commonly used in the pipe trades. UA instructors will learn the nature of ferrous and non-ferrous metals, both in raw and manufactured forms. There will also be an emphasis on the physical and mechanical properties of common metals and the processes used to create desired changes.

Sec	Location	Instructor
1	OE 131	P. Rufe
2	OE 131	P. Rufe

214 Methods in Teaching Water Supply

This course is designed to assist the UA instructor in Water Supply and Potable Water Heating. The curriculum is based on the *Water Supply Manual* and includes water sources, treatment, mains and services, building systems, and hot water supply systems. Elements of these topics, such as piping materials, piping formulas and system design, thermal expansion, and temperature and pressure relief valves will be discussed. Current "Green" technologies, such as rainwater harvesting, water re-use, solar thermal potable water heating, and geo-thermal potable water heating will also be introduced. Instructors will receive PowerPoint® presentations to use in their own classes. Emphasis will be given throughout the course on the best way to develop the UA instructor's own local training program.

Required text for this course: *Water Supply Manual (R/00); Water Supply Instructor CD*

Sec	Location	Instructor
1	LA 107	A. Wishnoff/I. Kieffer

222 Basic Computer for the Trade Teacher

This course will introduce UA instructors to the basics of computers. Instructors will learn to produce professional looking documents using a personal computer, create electronic spreadsheets to help prepare budgets and manage numerical information, prepare presentation graphics and present information. In addition, there will be time at the end of the week to learn search techniques on the Internet. Topics that will be covered are:

- Hardware and Software Overview
- Windows Operating System
- Word Introduction
- Creating Course Handouts
- Spreadsheet Introduction
- PowerPoint® Introduction
- Internet Introduction

223 Plumbing Fixtures and Drainage

This course is designed to aid those instructors who teach, or are planning to teach, a Plumbing Fixtures and/or Drainage class. The Plumbing Fixtures content is based on the *Plumbing Fixtures and Appliances Manual* and will cover methods of teaching about the design and function of plumbing fixtures, installation practices, institutional fixtures, fixture controls, appliances and accessories. Drainage content is based on the *Drainage Manual* and will cover methods of teaching about traps, building drainage systems, venting, interceptors, building and public sewers, sewage treatment and disposal. Plumbing fixtures and drainage systems will be discussed from their earliest uses through the latest sustainable technologies. Instructors will review and receive PowerPoint® presentations and videos designed to aid them in teaching.

Required text for this course: *Plumbing Fixtures and Appliances Manual (R/01); Plumbing Fixtures Instructor CD; Drainage Manual; Drainage Instructor CD*

Sec	Location	Instructor
1	LA 238	I. Keifer/A. Wishnoff

225 Computer Aided Drafting (CAD) Level 1

Prerequisite: Course 222, Basic Computers or equivalent.

This course is designed as an introduction to Computer Aided Drafting (CAD), the CAD environment and techniques of CAD instruction. Emphasis is placed upon the fundamentals of CAD software, as well as the creation and modification of two-dimensional CAD objects. Also included are techniques for applying CAD drawing tools, including Layers, Properties, Dimensioning, Annotation and Publishing of digital and hard copy drawings.

Required text for this course: *AutoCAD 2013 Level 1*

Sec	Location	Instructor
1	GLC 106	R. Zimmer/M. Priches

226 Microsoft PowerPoint® for Instructors

Microsoft PowerPoint® is a flexible tool for creating and delivering class presentations and handouts. This course will cover methods in developing instructional presentations and related student materials. Basic topics will include adding text, selecting appropriate fonts and colors, inserting graphics, reusing slides from other presentations, and running your slide show. Advanced topics will include: inserting hyperlinks, adding animations and slide transitions, customizing slide design and using the drawing tools. This is a hands-on computer lab class. Instructors in this class must have basic PC skills. For the final assignment in the class, you may bring personal photos/videos or work-related files to insert into your presentation. You will also need to bring the USB thumb drive that is included in your UA packet.

Sec	Location	Instructor
1	TI 241	K. Stadtfeld
2	TI 241	K. Stadfteld

227 Computer Aided Drafting (CAD) Level 2

Prerequisite: Course 225, Computer Aided Drafting Level 1 or CAD experience.

This course is a continuation of Computer Aided Drafting Level 1. This course examines the more extensive capabilities of CAD software as applied to CAD drawing production by exploring advanced methods relating to annotation, layering, properties and publishing. External file referencing, model space/paper, space layout techniques, and modeling in the three dimensional CAD environment will also be explored in detail.

Required text for this course: AutoCAD 2013 Level 2

Sec	Location	Instructor
1	GLC 106	R. Zimmer/M. Priches

230 Teaching the UA Curriculum Using Blackboard™

Prerequisite: Participation in at least one previous Blackboard™ class is required. Basic computing functions, such as emailing attachments will be used.

Instructors taking this class will learn how to prepare and present classroom material using Blackboard™. Instructors will learn how to create a course and enroll students into that class and design and plan the course to fit their needs. Best practices will include: transferring PowerPoint® presentations, and lesson plans. Creating your own tests from UA textbooks using Blackboard™ will also be covered. The use of the Grade Center for testing will be included in the course content. The class will be beneficial to instructors of all UA crafts.

Students must bring a USB drive with your local union course material on it to be developed in class.

Sec	Location	Instructor
1	BE 176	L. Guilfoyle
2	BE 176	L. Guilfoyle

231 Methods in Teaching the Green Professional Building Skills Training – GPRO-UA

This course teaches the basics of sustainability and provides an overview of the essential strategies and work practices that make buildings more efficient. GPRO-UA covers the "green gap" between standard trade skills and the new awareness required to successfully implement sustainable building practices. The GPRO-UA Manual is comprised of three content areas—GPRO Fundamentals of Building Green, Green Plumbing, and Green Mechanical Systems. This new certification program and manual provides a more complete overview of what constitutes green building and maintenance. The GPRO-UA Instructor Resource Library Training Package will be demonstrated, used, and made available for instructor use after successfully passing the course. A written exam will be administered at the end of the course. UA instructors who successfully pass the course and exam will receive the Urban Green Council GPRO-UA Instructor Certification.

Required text for this course: *GPRO Fundamentals of Building Green; GPRO Plumbing; GPRO Mechanical. (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	LA 309	D. Owen/S. Masterson/E. Honigstock
2	LA 309	D. Owen/S. Masterson/E. Honigstock

233 Introduction to Building Information Modeling (BIM)

Prerequisite: Course 452, Introduction to Computer Aided Drafting or a working knowledge of personal computers preferred.

This course explores the concepts of BIM as applied to piping coordination, layout, fabrication, and installation within the construction industry. Through the investigation of the various BIM tools and software currently available, students will explore issues relating to the processes and procedures involved with on-the-job applications of BIM in today's workplace. Topics include: defining the concept of BIM, industry standards for BIM, three dimensional model production, coordination clash detection, prefabrication applications, project management and scheduling applications, cloud-based collaboration, reality capture (laser scanning) and electronic transfer of virtual layouts to real-world installations (Total Station).

Sec	Location	Instructor
1	BE 272	J. Russell

236 Adult Basic Life Support/First Aid

This course will train and/or certify the UA instructor in conducting adult basic life support. This includes cardiopulmonary resuscitation, automated external defibrillation and related subjects, such as initial care for angina, stroke, and foreign body airway obstruction. The basic first aid portion includes: procedures for emergency movement of the injured, wounds/bleeding, traumatic shock, fractures, burns with special emphasis on accidental electrical contact, eye injuries, allergic reactions, seizures, drug overdoses, temperature-related problems, and many other job-related emergencies. Upon successful completion of this course, the UA instructor will be able to teach and certify other UA members in this course. This program has been officially accepted by the U.S. Department of Labor - Occupational Health and Safety Administration (OSHA), as well as other federal and state agencies. This is the only first aid course developed specifically for the building trades industry. Upon successful completion of the First Aid/CPR course the following will be shipped to the instructor at the local union: #DVD-B Training DVD's (Set of 2), #5TC Ambu Manikin Torso W/Checking Instr., #5B Ambu Manikin Baby, (All manikins include 5 face pieces and 100 head bags), #15A Cardiac Science AED Trainer, #26 Automated External Defibrillator, and Cardiac Science Model #G-3.

Sec	Location	Instructor
1	GM 332	C. Coyne/J. Mathews
2	GM 332	C. Coyne/J. Mathews

237 Adapting Apprenticeship to the 21st Century Students (New)

This course will focus on the generational differences that are being experienced by coordinators, instructors, and apprentices in Local Training Centers today. Participants taking this course will share in a roundtable, open discussion format. Most of us are facing challenges, at some level with students who view work ethic, attitude, appearance, punctuality, attendance, finance, communication, cell phones, texting, and technology differently than we do. Presenters from the training industry will discuss problems they are facing and solutions they are using to better communicate with Gen X (born 1965-1979) and Gen Y (born 1980-2000) students. There will also be discussion on how to reach out effectively to the Gen Z (2000-current) future generation. Please plan to share your thoughts and ideas with the group.

Required text for this course: *Y in the Workplace: Managing the "Me First" Generation*

Sec	Location	Instructor
1	SC 316	L. Culver/R. Pack/J. Leen/A. Schroeder
2	SC 316	L. Culver/R. Pack/J. Leen/A. Schroeder

239 BIM 360 Field and Glue (New)

Prerequisite: A working knowledge of personal computers. Course 233, Introduction to Building Information Modeling (BIM) preferred.

This course explores the application of Autodesk BIM 360 software as related to BIM management and piping installation workflows within a cloud-based collaborative environment. Utilizing the two software products that comprise BIM 360, BIM 360 Field and BIM 360 Glue, students will learn methods to streamline BIM project workflows, access project data anytime and anywhere, utilize cloud-based information reporting, and deliver critical information to field personnel in real time. Topics include: application of mobile (tablet) technologies to piping installation workflows, cloud-based collaboration, BIM management applications, cloud-based model access and coordination processes, and the downloading, installation and activation of Autodesk BIM 360 software.

Sec	Location	Instructor
1	BE 272	J. Russell/GTP Services

240 Basic Electricity (Revised)

This course will cover and present best teaching methods for safely using and working with electricity on the jobsite. Electrical theory will be covered to promote understanding of voltage, amperage, and resistance, with specific emphasis on the safe use of power tools on the job. Ground fault circuits (GFCI), circuit breakers, fuses, and circuit capacities will be discussed, along with the proper use of electrical multi-meters for basic electrical readings. The curriculum will be offered through presentations, hands-on, and supplemental learning software. The UA instructor will also be introduced to the UA software developed for use on Blackboard. The UA instructors will learn how to customize UA Circuit Builder software for enhancing the learning experience at their local training centers. The Basic Electricity Instructor Resource Library (IRL) will be demonstrated and made available for instructor use after successfully passing the course. **Refer to Safety Requirements.**

Required text for this course: *Basic Electricity Manual (R/15)*

Sec	Location	Instructor
1	TI 145	A. Fala
2	TI 145	A. Fala

243 HVACR Basic Electricity (New)

This course is for UA instructors in the service sector who have electrical knowledge and experience with electrical systems and controls. A review of electrical theory will be covered to promote understanding of voltage, amperage, and resistance, with specific emphasis on the safe use of troubleshooting tools on the job. HVACR control circuits will be covered in detail with real-world examples demonstrated. The curriculum will be offered through presentations, hands-on, and supplemental learning software. The UA instructors will also be introduced to the UA software developed for use on Blackboard and will learn how to customize UA HVACR Service and Circuit Builder software for enhancing the learning experience at their local training centers.

Required text for this course: *Basic Electricity Manual (R/15)*

Sec	Location	Instructor
1	GM 018	D. Berger
2	GM 018	D. Berger

246 Instructor Skills Omnibus Course

This course is designed to provide instructors with a foundation of teaching techniques using various methods essential for the successful delivery of any UA program. This will include topics such as Essential Skills for Learning, Conflict Resolution, Time Management, Learning Styles, and Dealing with Students with Learning Challenges. Understanding the issues around these topics will help an instructor deal with the evolving nature of the education process. This will also provide a foundation of skills every instructor needs to deliver effective programs to a variety of students and to achieve the highest success rate in the classroom. Students will be provided with the information for the course at time of delivery. There are no prerequisite texts required.

Sec	Location	Instructor
1	SC 204	A. Bourdages/B. Donaldson

247 Piping Codes for Industrial Work

Prerequisite: UA instructors should have a background in power piping installations or chemical/refinery process piping installations and knowledge of large-bore piping installation/repair is also helpful.

This course will provide the UA instructor with knowledge in the history of piping codes, piping metallurgy, material selection, installation, welding requirements, testing, inspection and code stamping for the American Society of Mechanical Engineers Codes on power and process piping. Classroom examples will be demonstrated on the fundamentals of applicable code sections, standards, materials, design of expansion loops, cold springing, specifications and quality control through verification of code compliance.

Sec	Location	Instructor
1	LA 332	R. Thein

250 Applied Drawing – Advanced

This course focuses on the advanced principles of drawing and plan reading, with a special emphasis on teaching proper drawing techniques to apprentices and journey workers. Lessons are based on materials found in the *Advanced Plan Reading and Related Drawing Set*. Topics include: interpreting multiple kinds of drawings, including architectural, mechanical, and structural, reviewing submittal data and job specification lead construction of a coordinated drawing, and identifying common problems with drawings used in lessons and developing teaching methods involving these problems.

Required text for this course: *Advanced Plan Reading and Related Drawing Set; Advanced Plan Reading Instructor CD*

Sec	Location	Instructor
1	BE 240	S. Straser

251 Plumbing Code Application

This course is designed to assist the UA instructor in teaching and developing a Plumbing Code class. The course will include a brief overview of the history of Plumbing Code development in the United States and Canada. Comparisons of requirements in the Uniform Plumbing Code, International Plumbing Code, National Standard Code, individual state written codes, and the National Plumbing Codes of Canada pertaining to fixtures, water heaters, water supply, drainage, venting, storm drains and gas pipe will be discussed. Software tools, such as the UA PCAM DVD, ExamView®, PowerPoint, AutoCad and BIM will be demonstrated. Resources on the Internet websites of various organizations, such as the UA, IAPMO, ICC, NCC, ASSE, ASPE, PHCC and MCA will be reviewed. The use of instructional techniques, such as creating assignments and tests, student presentations, and dealing with problems in classroom settings will also be covered in this course.

Required text for this course: *Plumbing Code Application Manual (F/08); Plumbing Code Instructor CD (F/08)*

Sec	Location	Instructor
1	LA 157	P. Casey/D. Straub
2	LA 157	P. Casey/D. Straub

257 Teaching Hydronic Heating and Cooling

This course is for UA instructors who presently teach, or are planning to teach Hydronic Heating and Cooling. Through a combination of PowerPoint© presentations, lecture, and group discussion, this class will familiarize the student instructors with the fundamentals of hydronic heating and cooling systems. The class will cover low- pressure water boilers, heat exchangers, chillers and condensers, water source heat pump systems, cooling towers, system controls and accessories, hydronic control valves, valve arrangement, piping system layouts, piping practices, centrifugal pumps, pump curves, system curves, primary/secondary pumping, flow balancing (elementary), venting, zoning, expansion/compression tanks, fluid flow principles, and heat transfer calculations.

Required text for this course: *Hydronic Heating and Cooling, (R/15). (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	GM 303	G. Aspen
2	GM 303	G. Aspen

258 Surveys and Inspections for Cross-Connection Controls

This course will train the student to interpret plumbing codes, evaluate building and site plans, and determine points of cross connection. The student will be trained to determine the appropriate level of hazard and to recommend the proper cross-connection control method, device, or assembly to protect the cross connection. The student will be trained as to the proper documentation and recordkeeping to perform a cross-connection survey. Student performance will be evaluated based on class participation, completeness of written assignments and final examination score. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package.

Required text for this course: *Backflow Prevention Reference Manual, Advanced Plan Reading and Related Drawing Set; Advanced Plan Reading Instructor CD. (Online Instructor Resource Library available for Backflow manual.)*

Sec	Location	Instructor
1	GM 305	J. Jordan

259 Backflow Repair and Maintenance

Prerequisite: UA instructors who wish to be certified as "Backflow Repair and Maintenance Instructors" must receive a passing grade on the written and practical examinations; they must also have completed Course 398 Backflow Prevention Certification (tester class) or equivalent and hold current Backflow Certification.

Fees are the responsibility of the student. See fee schedule.

This course is twenty (20) hours of intense classroom and practical instruction. Repairing, troubleshooting (testing), and safety will be the main themes of this course. UA instructors will be provided with practical methods dealing with the repair and maintenance of large diameter assemblies from various manufacturers. In addition, students are required to test the following backflow assemblies during the class: Reduced Pressure Zone, Double Check, Pressure Vacuum Breaker, and Spill Resistant Pressure Vacuum Breaker. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package. **Refer to Safety Requirements.**

Required text for this course: *Backflow Prevention Reference Manual (R/11). (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	OE 143	J. Kajak
2	OE 143	J. Kajak

260 Heat Fusion Joining of Polyethylene Pipe

This course offers a new twist on some old skills. Plastic piping is the "new" green technology and is expanding into all sectors of the pipe trades. If you know plastic piping, then the residential, commercial, industrial, geothermal, and utility customers will ask for you. Instructors will experience a "real-time" class on joining plastic pipe. It will cover everything from basics to electrofusion methods. Although this course is designed as a one-stop shop class, instructors will receive information, materials, and curriculum to design four specific classes at the local level. Practical application in heat fusion and electrofusion will be included. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	OE 165	T. Nelson/D. Singer
2	OE 165	T. Nelson/D. Singer

261 Principles of Training on Carbon Dioxide (CO_2R744) Refrigeration Systems

Prerequisite: Knowledge of the vapor compression refrigeration cycle

This course is designed to demonstrate and explain how best to teach CO2 Refrigeration Systems. The instructor will be provided with the latest technology, information, materials and resources necessary to deliver a program on the use of R744 in refrigeration systems. The safety, tools, and equipment required to practice in the CO2 industry will be demonstrated. The course will also include a demonstration of an operational CO2 system.

Sec	Location	Instructor
1	LA 150	G. DiFebo/Emerson
2	LA 150	G. DiFebo/Emerson

263 Delivering a Building Automation Program in HVACR

Prerequisite: Instructors attending this course should have HVACR control experience

The objective of this course is to provide the UA HVACR instructor with the knowledge and tools to deliver a Building Automation Program. Train-the-trainer methodology and techniques will be used to prepare the participant to develop their local program. An overview of Building Automation Systems (BAS) applications, DDC systems, and the major components presently used to control HVACR equipment will be covered. Energy conservation, control strategies and the human interfaces will be studied, as well as maintenance of systems. BAS practical trainers will be presented and demonstrated by participants in lab sessions to assist instructors with the development of the practical learning environment. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package. The Building Controls Instructor Resource Library (IRL) will be demonstrated and made available for instructor used after successfully passing the course. (Please bring a laptop)

Required text for this course: *Building Controls (R/13). (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	LA 325	C. MacDonald
2	LA 325	C. MacDonald

265 Teaching HVACR Service Apprenticeship Curriculum

Prerequisite: HVACR industry background, basic refrigeration cycle knowledge and basic electricity knowledge required

This course is intended to assist UA instructors in their development and presentation of classroom instruction in the subtopics relating to the five-year Heating, Ventilating, Air Conditioning, and Refrigeration Apprenticeship Training Program. Special emphasis is placed upon the how-to-teach aspect of classroom instruction. The development and use of PowerPoint® presentations as teaching tools to assist in the presentation of these core sub-topics is demonstrated. The *HVAC and Refrigeration Systems Training Manual*, along with the accompanying DVD and UA Instructor Resources will serve as the course materials. The ExamView® V/8.0 test development program (purchased separately) and its applications will be demonstrated. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package.

Required text for this course: *HVAC and Refrigeration Systems Training Manual and Workbook, ATP (F/13); ExamView® (V/8.0). (Online Instructor Resource Library available for HVAC manual.)*

Sec	Location	Instructor
1	LA 252	C. McGhee
2	LA 252	C. McGhee

266 Methods in Teaching Start, Test, and Balance

Prerequisites: Fundamental HVACR knowledge and basic science review as pertains to fluid properties and fluid flow is suggested. The course may also be beneficial to those seeking to facilitate a Start, Test, and Balance Course without the normal prerequisites.

This course is designed to equip UA instructors with presentations, resources, and hands-on demonstrations and evaluation exercises to conduct HVACR Start, Test, and Balance training. The course will focus on "how-to" instruction methods and techniques. The course is a resource for teaching—not learning Start, Test, and Balance. Emphasis is on practical skills and applied theory necessary for conducting a basic course in air and water balancing. The principles of heat transfer and fluid flow, as related to hydronic balancing and system performance, as well as electrical testing and measurement, will be covered. The application and operation of system components, such as fans, pumps, duct systems, and hydronic piping systems will be detailed. This course will occupy both a classroom and an operating mechanical area. Classroom examples will be demonstrated on operating air and hydronic components. Fluid flows will be calculated and then measured on these systems. One class session will be held in the mechanical room to allow UA instructors to experience a "hands-on" start up and balance of both an air and hydronic distribution system. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Start, Test, and Balance Manual (R/03); Start, Test, and Balance Instructor CD*

Sec	Location	Instructor
1	BE 182	E. Engel/F. McGrath

267 Advanced Air and Water Analysis

Prerequisite: Course 266, Methods in Teaching Start, Test, and Balance

This course is designed for UA instructors who have Start, Test, and Balance experience. It will include further studies of psychometrics, pump and fan design, electrical power analysis, and the use of variable frequency drives. Student instructors will have classroom experience and perform practical exercises on operating equipment in a mechanical area. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Start, Test, and Balance Manual (R/03); Start, Test, and Balance Instructor CD*

Sec	Location	Instructor
1	BE 182	E. Engel/F. McGrath

268 Technical Class for Sprinkler Fitters

This course is divided into three independent topics. One topic will be a two-day class on *NFPA 25: Standard for Inspections Testing and Maintenance of Water-Based Fire Protection Systems* 2014 edition. Day One discusses the requirements of maintaining a water-based fire protection system. Discussion points include: scope, compliance, and recordkeeping. Day Two discusses the liability aspect of the Standard, and why it is important for inspectors and contractors to know their roles. Fire Pump troubleshooting will be a two-day class. This class will discuss the working parts of a fire pump. Identifying common components that wear or need maintenance, as well as troubleshooting common fire pump issues will be discussed. Day Two will include a lab session for hands-on participation in replacing internal fire pump components. Victaulic's Vortex system is a one-day class. This class will introduce the instructor to a hybrid system that extinguishes fire via heat absorption and oxygen deprivation with minimal water presence. This system is utilized in protecting the UA Fire Protection Trailer.

Required text for this course: *NFPA 25 2014 Edition*

Sec	Location	Instructor
1	LA 375	C. Ketner
2	LA 375	C. Ketner

269 Victaulic Firelock Fire Protection Valves

Participants will gain a complete working knowledge of the installation, troubleshooting, and repair of Victaulic FireLock Protection Valves, and they will develop the essential skills to train UA apprentices and journey workers in these subjects. Victaulic will issue certifications for those who successfully complete the course.

Sec	Location	Instructor
1	OE 133	M. Ronecker/G. Koenig

271 Orbital Tube Welding

Prerequisite: UA18A and a GTAW Certification

UA GTAW Welder Certifications (UA-13, UA-14, UA-22, UA-41, UA-42, UA-43 or UA-45). The class is designed to help the instructor teach the programming and operation of many different orbital welding machines. They will receive hands-on training, as well as experience classroom time with many of the industry's leading manufacturers of orbital welding equipment. Students will receive the instructor training materials needed to return to their home locals and to be able to teach it in an effective manner. Instructors must bring their own calculator. Proper work clothing and safety shoes are mandatory. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	OE 125	C. Phipps/D. Bliven

274 Methods in Teaching Oxy-Acetylene Cutting and Welding

This course will illustrate the aspects of Oxy-Fuel Torch Operation and Safety. Class time will focus on selection of proper equipment including regulators, oxygen and fuel hoses, flashback arrestors, cutting and welding torches and tips. The class will examine the molecular structure of fuel gases used in the piping industry during class, and then they will have lab time to compare and evaluate with hands-on cutting. Lab time will also include demonstration and hands-on use of manual and motorized saddle machines, including Mathey Dearman's new CNC Saddle Machine used for pipe beveling and cutting. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Oxy-Fuel Cutting and Welding and Shielded Metal-Arc Welding Manual (R/98);Oxy-Fuel Instructor CD*

Sec	Location	Instructor
1	OE 144	R. Schnabelrauch
2	OE 144	R. Schnabelrauch

275 Methods in Teaching Advanced Orbital Tube Welding

Prerequisite: UA18A a GTAW Certification and Course Orbital Tube Welding

For this class, it is preferred that students have already taken the Orbital Tube Welding class, or have past experience in programming and using orbital welding. This class will help the students learn how to program "Step Welding" and will explain when it is practical to use. They will be taught a very efficient method of layout and bending of tubing. Students will receive the instructor training materials needed to return to their home locals and teach it in an effective manner. Instructors must bring their own calculator. Proper work clothing and safety shoes are mandatory. **Refer to Safety Requirements.**

Required text for this course: *Orbital Welding CD*

Sec	Location	Instructor
1	OE 125	C. Phipps/D. Bliven

277 Teaching Orbital Wire Feed Welding

Prerequisite: Certified Welder in the Gas Tungsten Arc Welding (GTAW) process

This course provides UA instructors with an understanding of how to teach the orbital wire feed welding process at the local level. The course covers the operation, technology, equipment set up, and safety issues associated with these types of advanced welding systems. Additionally, this course will cover process variables, system programmer control functions, and weld parameter selection, and gives the theoretical basis for weld program development. The course provides instructors with a hands-on approach in using the AMI 227 and Liburdi Gold Track orbital wire feed welding systems. Students must bring their own welding hoods, welding jackets, welding gloves, work shoes, and wear proper protective clothing. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	GLC 102	G. Burch/J. Ehlrich

282 Ammonia Piping, Service and Maintenance

Prerequisite: Instructors attending this course should have a sound foundation of refrigeration fundamentals and systems.

The objective of this course is to provide the UA instructors with an introduction to ammonia refrigeration systems and will provide the information needed to deliver a course on the Fundamentals of Ammonia Refrigeration Systems at their local training centers. This course further provides the local UA instructors with the information needed to integrate ammonia refrigeration system fundamentals into their existing Refrigeration and Air Conditioning programs. Analysis of ammonia refrigeration system flow will assist UA Journeypersons with an understanding of system layout and piping if they are dispatched to an ammonia installation. A comparison between the vapor compression refrigeration cycle used for halocarbon-based refrigerants and a typical larger ammonia refrigeration system that is used today will be given.

Required text for this course: *Ammonia Basics, Safety, Components, and Piping - TPC Training Systems*

Sec	Location	Instructor
1	LA 205	T. Panetta/K. Wyngaard
2	LA 205	T. Panetta/K. Wyngaard

Please refer to page 47 for special information regarding the 2015 welding classes.

283 Art of Tube Bending

This course covers methods in teaching the following topics: parts of a bender, the bending process, and setbacks as they relate to any bend and layout of bends. Discussions and explanations will show the layout, common mistakes, and how to correct errors of single bend, the use of props, and the lineup and leveling of tubing in the bending process. There will be explanations on isometric drawings, wire templates, numbering of the bending order, and safety concerns at the bending table. **Students are recommended to bring the TI 30XA Calculator to class.** All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Tube Bending Manual (R/13)*

Sec	Location	Instructor
1	LA 129	K. Gaby
2	LA 129	K. Gaby

286 Methods in Teaching Downhill Welding

Prerequisite: UA-1 Weld Test

This course is designed for the welding instructor who will be instructing apprentices and journey workers in the technique of Downhill Welding. The welding instruction will be given on large-diameter pipe. Classroom instruction on how and what to teach will be presented. This class will include joint preparation, line up on coupons and hands-on welding. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	BE 160	F. Hollabaugh/C. Waeckerle/W. Hendricks
2	BE 160	F. Hollabaugh/C. Waeckerle/W. Hendricks

289 Innovative Welding Techniques (New)

Prerequisite: Certified Welder in the Gas Tungsten Arc Welding (GTAW) and Shielded Metal Arc Welding (SMAW)

Industry is constantly in the process of improving the quality of welding in both construction and fabrication. This course is specifically designed for welder/instructors who are seeking to improve their pipe welding skills utilizing the SMAW and GTAW welding processes. Students will be shown tried-and-true welding techniques by highly experienced UA welding instructors who know how to get the job done. All enrolling students should possess the fundamental welding skills in the major processes before they choose to enroll in this course. Individuals taking this course should bring three or more personal welding techniques they may use in the SMAW and GTAW processes. These topics will be used for discussion points and demonstrations. Enrollment is limited to local union welding instructors who hold current SMAW/GTAW UA Weld Certifications. **Students must bring their own welding hoods, welding jackets, welding gloves, and wear proper protective clothing and foot protection. Refer to Safety Requirements.**

Sec	Location	Instructor
1	GLC 104	J. Forni/H. Platt
2	GLC 104	J. Forni/H. Platt

291 Industrial Piping Fabrication Training Program

This course is specifically designed for local union instructors interested in developing a training program for the fabrication of industrial piping. Through lecture and discussion, participants will be provided information on establishing a program to train members on the skills and techniques necessary for working at piping fabrication facilities. This course will provide a tried-and-true curriculum and teaching aids for teaching piping fabrication. The course will include best practices when working with piping fabrication contractors and also provide the curriculum for a pipe fabrication apprenticeship.

Sec	Location	Instructor
1	LA 270	S. Wenger/J. Dietzer
2	LA 270	S. Wenger/J. Dietzler

292 Instrumentation Level II Administrator and Implementing a Process Controls Instrument Technician Program

Prerequisite: UA/IBEW EPRI Instrumentation Level I Certification

This course is constructed of two parts. The first part is designed for instructors who hold a current UA/IBEW EPRI Level I Certification and are seeking to be certified as a Level II Administrator. Students should have a strong background in the fundamentals of industrial instrumentation and calibration. The UA/IBEW EPRI Level II Administrator Certification consists of five (5) process control instruments using a variety of calibration equipment. For information on the calibration equipment and instruments to be calibrated, please refer to the uanet.org website. This is a hands-on pass/fail certification exam. The second part is designed specifically for local unions that want to set up and implement an Instrument Calibration program. The curriculum will cover the educational resources, calibration equipment, and instruments needed to set up a program. Students will be given the curriculum materials to assist them in setting up this program.

Required text for this course: *Instrumentation and Process Controls Manual (R/00); Instrumentation Instructor CD*

Sec	Location	Instructor
1	LA 201	B. Perry/W. Boyd
2	LA 201	B. Perry/W. Boyd

295 Radiographic Film Interpretation

This course covers the basic skills and techniques required when viewing and interpreting radiographic films (x-rays). The course will involve theory and hands-on practical labs interpreting x-ray films of piping welds. The course instructors are highly experienced in radiographic examination and its uses in the inspection of piping welds and materials. It is recommended class attendees hold the AWS CWI credential. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	LA 371	J. Wiswesser/T. Ley
2	LA 371	J. Wiswesser/T. Ley

296 Plastic Piping Installer Certification

This course covers the specialized techniques used in bonding and assembly/installation of industrial plastic piping systems. In addition to classroom training, hands-on labs are provided. The labs include practical exercises related to bonding plastic piping, mechanical assembly, with the selection and use of proper tools and recommended techniques. Completion of the classroom portion will require passing a written examination. The hands-on lab consists of practical examinations in bonding PVC piping, mechanical assembly of flange, flange to butterfly valve, true union valve assembly, and threaded components. The PVC coupon will be pressure tested per ASME B31.3. Satisfactory completion of the course will qualify the student as a Plastic Piping Installer Instructor. **Refer to the Safety Requirements.**

Sec	Location	Instructor
1	HL 109	J. Ujvari/T. Doyle

297 Teaching with ExamView®

Instructors taking this course will learn the best practices for using ExamView®, a comprehensive solution for creating, administering, and scoring tests. UA instructors will create and administer classroom and on-line quizzes and exams using supplied question banks. UA instructors will learn how to convert their existing testing material into the ExamView® format. Converting tests for use with Blackboard™ on-line classes will also be covered. This class will be beneficial to UA instructors of all UA crafts. Instruction and assignments will correspond to UA textbooks.

Required material for this course: *ExamView® (V/8.0)*

Sec	Location	Instructor
1	BE 276	V. Burrall/J. Jenkins
2	BE 276	V. Burrall/J. Jenkins

298 Interactive Teaching Tools (New)

All applicants must have proficient computer skills and a general working and use of Microsoft PowerPoint, Excel, and Word. Familiarity with ExamView® software is helpful, but not required.

This course will introduce students to the interactive technology suite of e-instruction products; including CPS (Classroom Performance System) clickers, Mobi View mobile interactive whiteboard, and ExamView® Assessment Suite. By the end of the course, students will be able to integrate these technologies into their daily instruction by controlling their computer from anywhere in their classroom, delivering interactive course content with their Mobi, and they will be able to deliver check on learning and summative tests using the CPS system.

Sec	Location	Instructor
1	GLC 202	G. Korn/E-Learning
2	GLC 202	G. Korn/E-Learning

311 Introduction to Microturbines Installation and Service

This course will provide an overview of the fundamentals involved with the installation, operation and maintenance involved in Microturbines. Additionally, students will be given instruction on how Microturbines can be used as part of a Trigeneration system. Instruction will be done on a CCHP (Combined Cooling Heat and Power) system utilizing a new piece of equipment installed at Washtenaw Community College and the Great Lakes Training Center, which includes two 65kW Capstone Microturbines, an absorber, and a cooling tower.

Sec	Location	Instructor
1	GLC 112	GEM Energy

312 Solar Water Heating System Installations

The objective of this course is to give the UA instructor the tools he or she needs to develop a solar water heating installation course in his or her home local. Emphasis will be placed on the differences between a traditional water heating system and a solar thermal system. Site analysis, system and component design, installation safety, installation challenges, testing, and commissioning will all be discussed. The value of hands-on training tools and training aids will be emphasized throughout the course. Upon completion of this class, the UA instructor should have the information, materials, and knowledge necessary to develop a course that will prepare the journey worker for a NABCEP (North American Board of Certified Energy Practitioners) Solar Water Heating Installer or Entry Level certification exam, or their own local certification or licensing exam. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package.

Required text for this course: *Solar Water Heating Installation Manual. (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	HL 107	J. Sullivan

313 Operation and Set up of the Fire Protection Training Trailer (New)

UA student instructors participating in this course will learn how to present classes utilizing the individual trainers contained within the UA Fire Protection training trailer as they apply to the fire protection equipment installed and serviced by UA members. Instructors will learn the best practices for teaching with the training trailer that will include proper trailer set up and repacking, including water connections, set up, and draining. They will learn the operation of the onboard generator and audio video systems. The course will also include equipment safety regarding the fuel and electrical systems. The training trailer event scheduling and transportation policies will also be covered. Safety shoes are mandatory. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	OE 133	M. Ronecker/ J. Ivey

317 Variable Refrigerant Flow-The CITY MULTI Service Course (VRF) (Revised)

The CITY MULTI Service Course provides participants with an in-depth understanding of the technologies used in the CITY MULTI system. Additionally, an in-depth functional study of the system will be conducted and there will be a thorough discussion regarding the theories associated with properly applying, installing, commissioning and troubleshooting CITY MULTI systems. Concepts and theory are covered in the classroom and reinforced through practical, hands-on exercises. Static displays and fully functional CITY MULTI systems are installed for the system analysis and practical troubleshooting exercises will be completed. Laptops are required as participants will install and use Mitsubishi-provided software in the course. Target Audience: This course is recommended for installers, start up and service personnel for CITY MULTI systems who possess intermediate or greater HVACR technical skills and who have experience with Mr. Slim equipment.

Required text for this course: *Mitsubishi CITY MULIT Service Course Book*

Sec	Location	Instructor
1	OE 152	S. Wharry/Mitsubishi
2	OE 152	S. Wharry/Mitsubishi

318 Daikin VRF Systems (New)

VRV Install and Commissioning class covers best practices for installation starting with piping, flaring, system pressure test and evacuation, and charging methods. The course then covers: VRV Product and Technology—the VRV products that the technician in the field will encounter, how to identify them, and the basic technology that allows VRV Heat Recovery. VRV Basic Install explains the equipment and the installation requirements for 12 different indoor fan coils, including wiring, piping, and condensate management, as well as the outdoor units single and manifolded. VRV Remote Control Installation covers control installation, communication, field settings, group addressing, and setback programming. VRV System Commissioning is the field guide for the technician that contains the step-by-step commissioning checklist, most common field settings for indoor units and outdoor units, charging calculations, charging procedures, test operation, and basic installation troubleshooting. This course will include a notebook for note taking and the printed copy of the commissioning guide, as well as electronic versions of the presentations and the IOM and service manuals. Electronic simulation software will be demonstrated in class. Students will need colored pencils and pen for note taking. The presentations will be available as a PDF. If the student has Adobe Reader X or later version, notes can be taken on a personal laptop.

Sec	Location	Instructor
1	OE 154	C. Graham/Daikin
2	OE 154	C. Graham/Daikin

319 Introduction to Oil-Less/Magnetic Bearing Centrifugal Compressors

Prerequisite: Good understanding of centrifugal compressors, electrical troubleshooting experience and be familiar working with computers for the controls system. Instructors are encouraged to bring a laptop.

This class will cover the history of the compressors including theory of operation, external and internal compressor components, refrigerant flow through the compressor, electrical and control flow through the compressor, electrical components and operation, monitoring software introduction, software download and install, troubleshooting with the monitoring software, control options, and external controllers. This class will provide an overview of equipment from manufacturers, such as Turbocor, Multistack, and Smardt, along with providing instruction on how to utilize this information to teach this material to your local program.

Sec	Location	Instructor
1	LA 133	D. Sommise/J. Dahlin/Danfoss
2	LA 133	D. Sommise/J. Dahlin/Danfoss

327 VFD Fundamentals and Commissioning (Revised)

Prerequisite: Instructor should be a journeyperson HVACR technician with general knowledge of HVACR systems and equipment.

The objective of this course is to give the UA HVACR instructor the knowledge and tools necessary to create his or her own variable frequency drive class/curriculum at the local level. This class will be taught utilizing a format of lecture and hands-on. UA instructors will be able to identify the components and have basic troubleshooting knowledge of variable frequency drives. Instructors will be able to use the individual VFD literature provided to do basic programming and start up of multiple variable frequency drives. Class will include both lecture and practical hands-on. During lecture period discussion on common application, usage and interface of VFD with HVACR equipment will take place. During the hands-on period, instructors will become familiar with multiple industry-standard, variable frequency drives, which will include: Common practices of control wiring on VFD, common programming of VFD, and differences between VFD manufacturers. Class reading materials will include literature handouts used from specific VFD operation and service manuals.

Sec	Location	Instructor
1	LA 159	J. Balderson
2	LA 159	J. Balderson

328 ARC Flash Safety – NFPA 70E

Prerequisite: Must have an HVACR Electrical Background

This course covers OSHA and NFPA safety requirements and procedures. Topics include hazardous energy isolation, electrical safety, and arc flash safety. Instructors will receive classroom materials for use at their home locals. This course satisfies the train-the-trainer requirements for OSHA and NFPA 70E. Upon successful completion of the NFPA70E course the following will be shipped to the instructor at the local union: Instructional DVD training video, instructor manual, student manual, PowerPoints®, and a HAZARD Category 2 Kit that includes coveralls, gloves, leather protectors, safety glasses, a hardhat and bag.

Sec	Location	Instructor
1	LA 370	E-Hazard
2	LA 370	E-Hazard

329 Pump Service and Maintenance (New)

Buildings of all types and sizes use pumps for fire protection, heating, cooling, and for domestic water distribution. All pumps from the smallest and simplest to the largest and most complex are constructed and operated in accordance with certain basic principles. This course will give the UA craftsman an understanding of pump selection and pump performance and will describe operating characteristics. Proper servicing techniques will be discussed and demonstrated, along with a hands-on lab for the participants. Repair procedures will be outlined in a step-by-step fashion including manufacturer recommended best practices. The instructors who attend this course will take home curriculum to create a similar class for their locals.

Required text for this course: *Pumps Manual, Pumps Instructor CD*

Sec	Location	Instructor
1	TI 226	J. Hopkins
2	TI 226	J. Hopkins

330 Service and Maintenance of Cooling Towers (New)

The objective of a mechanical refrigeration system is to remove heat from a space or product, and to reject that heat to the environment in some acceptable manner. Cooling towers are frequently used to reject heat from mechanical refrigeration and air conditioning systems in many commercial buildings, hospitals and universities. Cooling towers, because of their mode of operation, can create ideal conditions for microbial growth. The objective of this course is to provide the UA instructor with the information necessary to teach apprentices and journeymen the principles of Cooling Tower Service and Maintenance. Course topics will include: Safety, Tower Configuration, Water Quality, Inspection Procedures, Repair Procedures, and Tower Retrofit Guidelines. The course will consist of lectures, presentations, and a site visit to the WCC cooling tower.

Required text for this course: *Provided by Baltimore Aircoil Corporation*

Sec	Location	Instructor
1	LA 376	P. Rodin
2	LA 376	P. Rodin

331 Medical Gas Refresher Course

Fees are the responsibility of the student. See fee schedule. Payment must be submitted to NITC by July 17th.

This course will bring current Certified Medical Gas instructors up-to-date on the latest editions of the standards governing the installation of medical gas and medical/surgical vacuum piping systems. This class covers the significant changes that have occurred between the NFPA 2005 standard and the NFPA 2015 standard. The Medical Gas Instructor Resource Library Training Package will be demonstrated, used, and made available for instructor's use after successfully passing the course. A proctored online exam will be administered at the completion of the course. Successful instructors will extend their certification as a Certified Medical Gas Instructor of the United Association by the NITC.

Required text for this course: *NFPA-99, Health Care Facilities, 2015 Edition; NFPA Medical Gas and Vacuum Systems Installation Handbook, 2015 Edition; ASSE Series 6000 Medical Gas Professional Qualifications Standard. (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	GM 319	T. Mraulak/J. Valdivia
2	GM 319	T. Mraulak/J. Valdivia

335 Principles of Absorption Chiller Systems (New)

Absorption chillers use heat energy directly to chill the circulating medium, usually water. The absorption cycle uses lithium bromide (absorbent) and water (refrigerant). Absorption chillers are usually classified according to the type of heat energy used as the input, and whether it is a single or two-stage generator design. This course will describe the basic components in a simple absorption system and its function in the refrigeration cycle. The participant will learn to understand the terminology associated with absorption systems. Component functions will be stressed in order to give instructors a working knowledge of unit design, operation, start up and troubleshooting. In addition, the operating characteristics of various machines will be discussed with an explanation of how the coefficient of performance (COP) is used in equipment selection. ASHRAE 15 machine room safety requirements will be offered in the materials.

Required text for this course: *Absorption Chillers TPC Training Systems*

Sec	Location	Instructor
1	LA 209	J. Sanchez

336 HVACR Performance and Compliance (New)

Prerequisite: GPRO and UA HVACR STAR

This course is designed to accumulate and evaluate practical data related to energy usage of mechanical equipment. The purpose of the course is to learn the ability to confirm, through functional performance testing of mechanical equipment, that the relevant equipment has been installed properly and is operating as designed and specified. Functional performance tests and checklists are developed in accordance with the acceptance testing standards. Acceptance testing is required by many state energy codes to ensure that equipment, controls, and systems operate as required. The instructor will also learn to utilize the EPA Building Portfolio Manager to track and assess energy and water consumption for commercial buildings. Upon completion, the instructor will be able to formulate reports required for document compliance. The students will audit a 5,000 sq. ft. building on campus during the course and present their findings to the class. The Energy Audit Instructor Resource Library (IRL) will be demonstrated and made available for instructor use after successfully passing the course.

Tool Grant: Fieldpiece Refrigerant Manifold – Fluke Power Quality Meter

Please Note: Local training center to be reviewed annually for delivery of this course.

Required text for this course: *Energy Audit Manual*

Sec	Location	Instructor
1	GM 311	T. McQuiston/C. Pelkey
2	GM 311	T. McQuiston/C. Pelkey

340 Pipe Fitting Layout Course

This class will show UA instructors a unique way to teach how to layout pipe and fittings in the field without math or manuals. This class will also cover the mitering of pipe and fittings and the fabrication of specialty tools for the trade. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	OE 163	A. Cazan/M. Duewerth
2	OE 163	A. Cazan/M. Duewerth

341 Robotic Total Station Layout and Laser Scanning for Real World Modeling

This course demonstrates methods for proper setup, utilization and care of laser based layout, positioning, and scanning equipment. The equipment includes robotic units (Total Station), reality capture equipment (Laser Scanners) , tablet computers and software from leading manufacturers. The class will also employ hands-on experience to learn piping construction layout techniques, measurement techniques, scanning techniques (including 3D point cloud technology), and surveying techniques when applying layout points and point clouds to Building Information Modeling (BIM) processes.

Sec	Location	Instructor
1	OE 109	T. Stright /T. Knight/ E. Lambrecht/P. Ramirez
2	OE 109	T. Stright /T. Knight/ E. Lambrecht/P. Ramirez

347 Bolted Connections Training Course (Revised)

This course will train personnel on the practical applications and current industry best practices on assembling bolted flanged pipe joints in accordance with the ASME PCC-1 Codebook on the Guidelines for Pressure Boundary Bolted Flange Joint Assembly, for both new and in-service flanges. The course will have a practical "hands-on" workshop. Participants will also gain an overview of the latest developments on gasketed joint assembly, torque factors, bolting patterns, gasket behavior, tightness and gasket selection; information that is utilized in developing effective bolted flange joint assembly procedures for a broad range of flange sizes and service conditions normally encountered in the piping industry.

Sec	Location	Instructor
1	LA 105	P. Doris/J. Green
2	LA 105	P. Doris/J. Green

348 Ultrasonic Thickness Measurement Technician Training Course (New)

This course will provide theory and practical training to provide the student with an understanding of ultrasonic thickness measurement principles and its actual applications. The course will cover the basic skills necessary to set up and operate an Ultrasonic A-scan thickness measurement instrument, as typically used in industry due to erosion and corrosion of piping in determining material thicknesses. At the conclusion of the course a UT Thickness Testing Examination will be proctored by the Non-Destructive Testing Institute, allowing students to become certified as Ultrasonic Thickness Measurement Technicians.

Sec	Location	Instructor
1	LA 137	B. Wiswesser/N. Jacobson
2	LA 137	B. Wiswesser/N. Jacobson

353 ASME Section IX Welding Code

This course is designed to provide UA instructors with an understanding of welding procedure specifications and welder qualifications in accordance with Section IX of the ASME Code. UA instructors will be able to apply the rules of Section IX as they pertain to the development of welding procedure specifications and the qualification of welders. A logical approach to compliance with Section IX is discussed and implemented in an open workshop environment.

Sec	Location	Instructor
1	LA 369	D. Glavin
2	LA 369	D. Glavin

356 Methods in Teaching Advanced Gas Tungsten Arc Welding (GTAW)

Prerequisite: Certified Welder in the Gas Tungsten Arc Welding (GTAW) process

This train-the-trainer course is specifically designed for local union welding instructors. It covers advanced pipe welding techniques used in such applications as welding high alloys materials and process piping. The course focuses on "how to teach" advanced techniques of gas tungsten arc welding (GTAW) and process variables for a variety of materials. The piping industry is turning to the use of more advanced welding equipment and techniques. This course provides local unions a means of preparing its members in developing the skills necessary to address the industry's welding needs. Enrollment is limited to local union welding instructors who hold current GTAW UA Weld Certifications. Students must bring their own welding hoods, welding jackets, welding gloves, work shoes, and wear proper protective clothing. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	OE 103	D. Hintz/P. Kadlec
2	OE 103	D. Hintz/P. Kadlec

358 Methods in Teaching Advanced Shielded Metal Arc Welding (SMAW) (Revised)

Prerequisite: Certified Welder in the Shielded Metal Arc Welding (SMAW) process

This course, specifically designed for local union welding instructors, covers advanced pipe welding techniques used in such applications as heavy wall piping and welding alloys. The course focuses on "how to teach" advanced techniques of shielded metal arc welding (SMAW) and process variables for a variety of materials. The piping industry is turning to the use of more advanced welding equipment and techniques; this course provides local unions a means of preparing their apprentices and journey workers in developing the skills necessary to address the industry's welding needs. Enrollment is limited to local union welding instructors who hold current SMAW UA Weld Certifications. Students must bring their own welding hoods, jackets, and gloves. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	OE 156	J. Wilson/T. Luszczynski
2	OE 156	J. Wilson/T. Luszczynski

359 Methods in Teaching Advanced Gas Metal Arc Welding (GMAW)

Prerequisite: Certified Welder in the Gas Metal Arc Welding (GMAW) process

This course is specifically designed for local union welding instructors and covers the use of advanced gas metal arc welding equipment and techniques. The course focuses on how to teach advanced techniques of gas metal arc welding (GMAW) and process variables for a variety of materials. More and more, the piping industry is turning to the use of advanced welding equipment and techniques. This course provides local unions a means of preparing their members in developing the skills necessary to address industry's welding needs.

Sec	Location	Instructor
1	OE 123	A. Caron/D. Lavoie
2	OE 123	A. Caron/D. Lavoie

362 Advanced Valve Repair Instructor Course

Prerequisite: Course 361, Valve Repair, EPRI Valve Repair certification

This course includes classroom instruction, textbook materials, instructor CDs and hands-on experience. Class members will be instructed on maintenance procedures, hydraulic torquing, pneumatic control valves, and pressure seal valves. Students will learn how to procedurally disassemble, inspect, and reassemble pneumatic control valves, as well as pressure seal valves. The instructor CD on hydraulic torquing, DVD of pneumatic control valve and pressure seal valve, along with a CD that includes 3-D imagery of each valve will be made available to each student. Proper work clothing and safety shoes are mandatory.

Required text for this course: *Advanced Valve Repair Manual, Advanced Valve Repair Instructor CD*

Sec	Location	Instructor
1	OE 135	D. Shue
2	OE 135	D. Shue

371 Crane Signalperson Practical Examiner Accreditation

This is an intensive course that includes Signalperson Candidate Training, Signalperson Certification Written and Practical Examinations, and the Signalperson Practical Examiner Accreditation Workshop. The course covers all the pertinent rules specified in OSHA Federal Regulation 29 CFR Part 1926—Cranes and Derricks in Construction, and in ASME Standards B30.5, B30.3 and B30.23. Also covered are theoretical and practical components of signaling, and the course will use a combination of animations and videos to illustrate all the standard hand signals, crane characteristics, and crane limitations. Numerous examples and practice scenarios are included in the course, so the instructor can practice until signaling becomes second nature. During the Practical Examiner Accreditation Workshop the candidate's performance as an examiner will be observed and evaluated, and both a written and practical exam will be taken. Instruction will also include a comprehensive review of NCCCO policies and procedures, as well as in-depth coverage of the computer-delivered Signalperson Practical Exam. After the completion of the workshop, the student will have six months to schedule an audit at his/her home local union training center before they can administer their first exam. At the conclusion of these sessions and a successful audit, instructors will have obtained their NCCCO Signalperson Certification, as well as their NCCCO accreditation as a Signalperson Practical Examiner that authorizes them to administer NCCCO Signalperson Practical exams nationwide. The NCCCO Accreditation is good for five (5) years.

Required text for this course: *Signal Person Training Student Manual, Signalperson Instructor Manual with CD*

Sec	Location	Instructor
1	GM 325	Equipment Training Solutions
2	GM 325	Equipment Training Solutions

378 Methods in Teaching Plumbing Service and Customer Service (Revised)

This course is intended to assist UA instructors in their development and presentation of classroom instruction of the UA Plumbing Service Customer Care Curriculum. Throughout the training, participants will identify new opportunities with up-to-date plumbing fixtures, products, tools, equipment, safety and green technology in the plumbing industry. This course will address the importance of customer communications, social styles, salesmanship, marketing, and will include the cost of doing business. All courses are train-the-trainer and center around methods of teaching. A large portion of the course will involve hands-on training. Proper work clothing and safety shoes are mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Plumbing Service Maintenance and Repair Manual (ATP) (F/11); MSCA Customer Service Skills Leader CD; UA Customer Service for the Residential Service Technician Video Modules; Customer Service Skills Flash Cards. (Online Instructor Resource Library available for the Plumbing Service manual.)*

Sec	Location	Instructor
1	IT	R. Melko/R. Boyd
2	IT	R. Melko/R. Boyd

385 Teaching the UA STAR Review

UA instructors taking this class will learn best practices on how to conduct a 16-hour review for the UA STAR certification exams (HVACR, Steam fitting/Pipefitting, and Plumbing). All of the categories covered by the exam will be reviewed. How to utilize the UA interactive online curriculum to download UA STAR review materials and practice exams will be covered. Web-based STAR review classes will also be discussed. The final four hours of the class will be the actual NITC-proctored UA STAR exam. The cost of the exam is $136.00. Those individuals passing the exam will receive 32 college credits from Washtenaw Community College. Those instructors who are already UA STAR certified will participate in a four-hour roundtable discussion on future UA STAR sub-exams. **Payment of $136.00 for this course/exam must be submitted to NITC (Crystal Galvan at 877-457-6482) by July 18th.**

For the UA STAR HVACR application form click here: http://uanet.org/pdf/dep/train/HVAC_Star_Application.pdf. For the UA STAR Pipefitting application form click here: http://uanet.org/pdf/dep/train/Pipefitting_Star_Application.pdf. For the UA STAR Plumbing application form click here: http://uanet.org/pdf/dep/train/Plumbing_Star_Application.pdf.

Required text for this course: *ExamView® (V/8.0)*

Sec	Location	Instructor
1	LA 163	G. Schalk
2	LA 163	G. Schalk

390 Authorized Testing Representative (ATR) Refresher Training

This course is designed to update certified ATRs with the current requirements of the UA Welder Certification Program. Emphasis will be placed on program changes and effects on local unions' implementation of system requirements. A written examination will be administered to evaluate the UA instructor's understanding and capability of implementing all program requirements.

Sec	Location	Instructor
1	LA 254	C. Sullivan
2	LA 254	C. Sullivan
3	LA 378	E. Eden
4	LA 378	E. Eden

391 Utilizing Jobsite Technology (New)

How a jobsite functions today is rapidly changing from jobsites of the past. The incorporation of technology has become commonplace and continues to increase with the introduction of new equipment. This course is designed to provide attendees with an overview of the new equipment and technology that is changing the way projects are being done. Attendees will gain an understanding of how new equipment is being utilized from the job trailer to the jobsite. Some of the new equipment that will be shown and discussed include: BIM, CAD, Field and Glue 360 on iPads, 3-D Laser Scanners and Robotic Layout devices. Additionally, there will be demonstrations of new technologies, such as Virtual Reality Eyewear and Augmented Reality and how they are being utilized will be discussed. This will give the attendees a better understanding of how this technology is changing our jobsites. Participants will see how even the standard "gang box" is being updated to incorporate new technology. This class will not only have discussion and demonstrations of the new equipment and technology, but will also allow participants many opportunities for "hands-on" sessions with this equipment. Participants wanting to see the latest in technology, which will be utilized on our jobsites of tomorrow are encouraged to participate in this class.

Sec	Location	Instructor
1	TI 224	E. Posey
2	TI 224	E. Posey

393 Your Role in Lean Construction (New)

What is "Lean Construction?" How does it affect me on the jobsite? "If a project is using Lean Construction, does it mean less work hours?" These are some of the many questions UA members might have regarding Lean Construction and its impact on the work and worker. Is it a threat or an opportunity? In construction, waste happens often when the workforce has to go on a treasure hunt looking for things like materials, tools, equipment or information, or has to wait because of a material shortage or trade stacking. Does this sound familiar? The concept of Lean Construction addresses many challenges that happen on the jobsite. End-users and general contractors have seen the value of Lean Construction. You will be seeing an increase of construction sites incorporating Lean Construction. It is paramount that the UA's course has an understanding of the Lean concept and the ability to apply it effectively. This course will provide answers about Lean construction and why the UA strategy is to be a leader in embracing Lean. This course will provide an overview of Lean Construction, address how it will affect those working on a jobsite, and it will share best practices. Attendees will see how applying the simple tools and concepts will increase productivity. Additional discussion will center on where Lean Construction has been utilized successfully on UA projects, and its potential to lead to additional work. This is a very important concept that the UA's contractors and owners are embracing. This course is intended to provide an introduction to Lean Construction, and explain how it can be taught and incorporated into the training program at your local.

Sec	Location	Instructor
1	GM 017	D. Martinez/Quality Support Services, Inc.
2	GM 107	D. Martinez/Quality Support Services, Inc.

394 Boiler, Piping and Pressure Vessel Repair

This is a twenty (20) hour course instructed by a National Board Commissioned Inspector from the Hartford Steam Boiler Inspection & Insurance Company. The course will present detailed information on the National Board accreditation process for obtaining the National Board "R" Stamp and in-depth discussions on the requirements of the National Board Inspection Code, Repairs and Alterations.

Sec	Location	Instructor
1	TI 151	J. Ferreira

510 Public Speaking

Students will receive the appropriate instruction regarding public speaking, and they will have multiple opportunities to demonstrate these skills through presentations. The presentations will highlight their abilities to organize information in a format that contains an introduction, a body, and a conclusion. Instructors will also learn the appropriate choices in both verbal and non-verbal communication during the presentation and will learn how to adapt to an audience. They will learn how to manage speech anxiety and to listen both critically and emphatically. Developing these public speaking skills will help students manage communication effectively in their personal, social, and professional lives.

Sec	Location	Instructor
1	TI 110	N. Cullin
2	TI 110	N. Cullin
3	TI 108	M. Brooks
4	TI 108	M. Brooks
5	TI 116	K. Shaper
6	TI 116	K. Shaper
7	TI 118	A. Johnson
8	TI 118	A. Johnson
9	TI 137	A. Fournier
10	TI 137	A. Fournier

520 Labor History and the UA Part One: 1800 to 1920

Labor History and the UA is a class covering the struggles of the labor movement from 1800 to 1920. This class will cover events and people through time who have played an important role in labor history.

Required text for this course: *The Rise of the United Association (Martin Segal)*

Sec	Location	Instructor
1	LA 261	T. Willson
2	LA 261	T. Willson

521 Labor History and the UA Part Two: 1920 to the Present

Labor History and the UA Part Two is a continuation of Labor History and the UA Part One. This class will cover various labor historical and United Association events throughout the 20th century, and will discuss how they have had an impact on society. UA instructors will be using Blackboard™ during this course.

Required text for this course: *Labor in America (Melvyn Dubosfky and Foster Reah Dulles); Skilled Hands, Strong Spirits (Grace Palladino); The United Association 1924-1989 (Barbara Griffith); DVD published by AFL-CIO Building Construction Trades Department "A Century of Leadership—Skilled Hands Strong Spirits 100-Year Anniversary" (1908 - 2008); Triangle Fire DVD (PBS, 2011); At the River I Stand DVD (1993) (recommended, but not required)*

Sec	Location	Instructor
1	LA 274	R. Manley
2	LA 274	R. Manley

The Ohio State University's (OSU) widely renowned Weld Engineering Program has developed a Weld Engineering Certificate Program for the United Association. Instructors from OSU will lead three 20-hour courses, the successful completion of which will result in a Weld Engineering Certificate from OSU. This program is specifically designed for members of the United Association's incomparable workforce, enriching the participant's expertise of the welding field.

These are "hybrid" courses, specially designed from elements of the OSU Weld Engineering curriculum, and built around the B31.3 ASME Pressure Piping Code "Process Piping." These are high-level courses and are only open to individuals operating at the level of inspector and/or weld technician/specialist. Due to the specialized nature of this course and because there are two additional off-site courses, upon successful completion of the course, individuals will receive a certificate. There may be certain costs associated with a course 600.

600 Course #1: Principles of Arc Welding Processes, Welder and Weld Process Qualification

Prerequisite: Attendees must hold current credentials as an AWS Certified Welding Inspector (CWI®)

This first course of a three-course certificate program, which focuses on the fundamentals and principles of welding processes used for pressure piping, with emphasis on the arc welding process. Arc welding topics include power supply fundamentals, process variables and other important characteristics. The course includes an introduction to non-arc welding processes, such as laser, resistance, friction and explosion welding as well as brazing. The end of the course covers a brief review of ASME Section IX, with emphasis on the importance of the weld process variables discussed throughout the course.

Sec	Location	Instructor
1	TI 149	D. Phillips

601 Weld Metallurgy, Defects, and Discontinuities for Process Piping Materials *(Offered through Regional Training)*

Prerequisite: Attendees must hold current credentials as an AWS Certified Welding Inspector (CWI)

This course would build upon course 600, but focus on the weld metallurgy of important B31.3 materials such as plain carbon and low alloy steels, stainless/corrosion resistant steels, and nickel base alloys. In addition to building an understanding of metallurgical issues pertaining to the welding of these materials, the course will include an emphasis on the typical defects and discontinuities that are encountered during welding and how they can be prevented.

602 NDE for Process Piping *(Offered through Regional Training)*

Prerequisite: Attendees must hold current credentials as an AWS Certified Welding Inspector (CWI®)

This course will focus on the principles and application of all of the NDE techniques used for process piping including visual, magnetic particle, liquid penetrant, x-ray, and ultrasonic. A particular emphasis will, of course, be placed on how these techniques are used to detect weld discontinuities and defects.

An Advanced HVACR Certificate Program has been developed for the United Association by Ferris State University. The Corporate and Professional Development Center is the arm of the College of Engineering Technology that connects resources of Ferris state University to business, industry, and personnel through applied research, education, and training. Ferris State University faculty will lead three 20-hour courses based on Ferris State Univerity curriculum. The successful completion of all three courses will result in a "Certificate of Completion" in UA Advanced HVACR. This program has been developed with the intention of providing an opportunity for individuals to increase their knowledge in the HVACR field as the United Association continues to promote its workforce as the most qualified and trained workforce in the world. These courses are specially designed from elements of the Ferris State University HVACR curriculum to give the participants a high level understanding of the process of selecting, controlling and designing mechanical systems. The certificate program would be composed of the following courses below.

650 Commercial HVACR System Design and Equipment Selection

This first course of a three-course certificate program, will focus on the selection, application and layout of equipment and systems for commercial buildings. Given building architectural plans, codes and standards, and the owner's requirements, participants will select an appropriate HVACR system and produce mechanical schedules and specifications. The student will gain an increased understanding of the major mechanical system components such as chillers, boilers, cooling towers, and air handling units. In addition, UA technicians will learn to evaluate architectural considerations, system configurations, and the economics in relationship to a buildings first cost and operating cost.

Sec	Location	Instructor
1	LA 301	Ferris State University
2	LA 301	Ferris State University

651 Direct Digital Control Theory and Building Application *(Available 2016)*

Prerequisite: 263 Delivering a Building Automation Program in HVACR

650 Commercial HVACR System Design and Equipment Selection

This course will focus on the study of control loop theory related to commercial comfort and safety applications. The study of digital electronic control of mechanical systems to maximize their operating efficiency. The layout, programming and operation of the building management system will be emphasized. In the class the student will gain a fuller understanding of microcomputers, hardware, and writing DDC programs and specifications.

652 HVACR Air and Hydronic System Design *(Available 2017)*

Prerequisite: UA HVACR Star

UAT 267 Advanced Air and Water Analysis

UAT 651 Direct Digital Control Theory and Building Application

This course will focus on the study of water and air systems in commercial buildings. The study of air distribution and hydronic design of mechanical systems to maximize their operating efficiency. In the class the student will gain a fuller understanding of fan selection, pump selection, and flow control devices.

377 Methods in Teaching the Plumbing Service Maintenance and Repair Manual

This course is intended to assist UA instructors in their development and presentation of classroom instruction of the UA Plumbing Service Training Curriculum. The course will include methods of instruction pertaining to the UA Plumbing Service and Maintenance and Repair Manual. It will also include hands-on skills training utilizing Plumbing Service Mobile Classroom Training Modules and Service Lab examples and will include the use of appropriate tools and equipment. The course emphasizes the communication skills needed in the plumbing service industry. Additionally, the course will include material referencing plumbing service troubleshooting, repair, installation, sales, and service vehicles. All courses are train-the-trainer and center around methods of teaching. A large portion of the course will involve hands-on training. Proper work clothing and safety shoes are mandatory for that time. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package. **Refer to Safety Requirements.**

Required text for this course: *Plumbing Service Maintenance and Repair Manual (ATP) (F/11), (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	IT	B. Wilk/J. Fernandez/P. Baker

398 Methods in Teaching Backflow Prevention

Prerequisite: Backflow Prevention and Assemble Tester Certification

This course presents guidelines for instruction in acceptable testing practices, annual inspection, and backflow prevention assembly repair for backflow preventers used in cross-connection control programs. Course materials cover topics such as cross-connection identification, reasons for backflow occurrences and the dangers they present, methods of cross-connection control, recommended applications for each type of backflow methods, devices or assemblies, relevant regulations, codes, and tester liability. There will be a demonstration of a number of acceptable hands-on testing procedures and maintenance requirements for various devices and assemblies. Minimum requirement for attending this course is to have previously received a nationally recognized Backflow Prevention and Assembly Tester Certification. UA instructors who successfully pass the voluntary written and practical exam will receive an ASSE Backflow Tester's Recertification and will be able to complete the necessary paperwork to obtain an ASSE/IAPMO Series 5000 Backflow Instructor Certification and an ASSE/IAPMO Proctor Certification. All courses are train-the-trainer and center around methods of teaching. The course will involve hands-on training, so proper work clothing and safety shoes are mandatory for that portion of the course. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package. **Refer to Safety Requirements.**

Required text for this course: *Backflow Prevention Reference Manual (R/11), ASSE/IAPMO Series 5000 Professional Qualification Standard (Latest Edition). (Online Instructor Resource Library available for Backflow manual.)*

Sec	Location	Instructor
1	OE 150	S. Cleary/R. Young

403 Operation of the UA Trailers

UA student instructors participating in this course will learn how to present classes utilizing the equipment and trainers contained within the UA training trailers, as they apply to the mechanical and plumbing systems installed and serviced by UA members. Instructors will learn the best practices for teaching with the training trailers. Trailer and equipment safety, proper trailer setup and repacking, operation of the onboard generator, audio video systems, fuel, electrical, and water hookup will be covered. Training trailers that are covered in this course are: the UA Plumbing Service Demonstration Training Trailer, the UA Welder Demonstration Training Trailer, the UA Sustainable Technologies Demonstration Training Trailers, and the UA Trades Demonstration Training Trailer. The training trailer event scheduling and transportation policies will also be covered. Safety shoes are mandatory. **Refer to Safety Requirements.**

Sec	Location	Instructor
1	SC 328	R. Gale/F. Southers

419 Industrial Rigging Technologies

This course will ensure that individuals are trained in the planning and precautions required when lifting materials and equipment; proper and safe rigging of loads; proper applications of slings and rigging hardware; advantages and disadvantages of each piece of rigging gear; uses of rigging hardware; determination/calculations of rigging loads and equipment; and proper maintenance of rigging equipment and rigging personal protective equipment. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety (steel toe) boots are still mandatory for that time. **Refer to Safety Requirements.**

Required text for this course: *Rigging Manual (R/04); IPT Crane and Rigging Handbook. (Online Instructor Resource Library available for Rigging manual.)*

Sec	Location	Instructor
1	OE 127	D. Gervais/K. Robinson
2	OE 129	M. Howard/J. Vellenga

420 Industrial Rigging Certification for Instructors

Prerequisite: Course 419, Industrial Rigging Technologies

Industrial Rigging Certification for the instructor is a train-the-trainer course that teaches a theoretical and a practical component covering the best rigging practices and will include: calculating centers of gravity, sling stress, crane setup, and use of the tuggers, jacks, and rollers. There will be hands-on performance evaluation. Instructors rigging skills are evaluated by means of a certification examination consisting of a multiple choice written exam and a hands-on performance exam. The hands-on performance exam consists of performance steps that are administered by having the examinee actually perform a sequence of lifts using the necessary tools and equipment. Students must bring an 8GB flash drive and calculator to class. All courses are train-the-trainer and center around methods of teaching. Only a small portion of the course will involve hands-on training, although proper work clothing and safety shoes are still mandatory for that time. **Refer to Safety Requirements.**

Note: Review pages 1 to 163 in the IPT Crane and Rigging Handbook and all of the Rigging Manual, plus review the math in both books.

Required text for this course: *Rigging Manual (R/04); IPT Crane and Rigging Handbook. (Online Instructor Library available for Rigging manual.) Student must bring an 8GB flash drive*.

Sec	Location	Instructor
1	LA 175	P. Faley/S. Parsons/E. Ingles/ B. Lee/F. Reece

430 Authorized Testing Representative (ATR) Training

This course is designed to provide participants with an understanding of the fundamentals of the UA Welder Certification Program. Participants will be able to perform the duties and responsibilities of an ATR as defined in the program, from administrative functions, to performing visual inspection of welded coupons to determine their acceptability and verifying compliance of radiographic examinations to the program. It is recommended to bring a calculator to this class for figuring qualification ranges of welders. To achieve the position of ATR an individual must complete and satisfy the mandatory requirements, which include a letter of recommendation from local union management and a high school diploma. This class will also serve as a refresher class for those who are already ATRs. Students should bring a calculator to class.

Sec	Location	Instructor
1	LA 374	T. Murphy/M. Magennis
2	LA 372	J. Clark/R. Derby

443 UA/MCAA Foreman Certification

This course enables UA instructors to implement the Foreman Certification program at their home local. It covers topics critical to the workplace and jobsite supervision such as: leadership, relationships, documentation, planning and scheduling the work, safety, coordinating subcontractors and suppliers, and measuring and managing productivity. Also included are comprehensive discussions on the full cost of an hour of labor and the Standard for Excellence. Navigation and use of the Foreman resources available on the interactive online Curriculum Instructor Resource Library (IRL) will be demonstrated and reviewed. Upon completion of this course there will be a Blackboard™ certification exam. Upon successful completion of the course, instructors will be given access to the Resource Library Training Package.

Required text for this course: *Foreman Training Student Manual (R/13). (Online Instructor Resource Library available.)*

Sec	Location	Instructor
1	GM 309	J. Shue/J. Williams
2	GM 314	K. Crosby/F. DaCato

468 Medical Gas Instructor

Prerequisite: Current Medical Gas Installer and Medical Gas Brazer certifications

Fees are the responsibility of the student. See fee schedule. Resumes, applications, and payment must be submitted to NITC by July 17th.

This train-the-trainer course covers the NFPA 2012 codes and ASSE Series 6000 standards that govern correct medical gas and medical-surgical vacuum piping system installation and testing, requirements for installer qualification, and requirements for brazer qualification in accordance with ASME Section IX. A proctored online exam will be administered at the completion of the course. UA instructors who successfully pass the course and exam will receive the ASSE/IAPMO Series 6000 Standard #6050 Medical Gas Systems Instructor Certification. Upon successful completion of the course, instructors will be given access to the Medical Gas Instructor Resource Library Training Package.

Click here for Medical Gas Instructor application: http://uanet.org/pdf/dep/train/Med_Gas_Instructor_Application.pdf.

Required text for this course: *NFPA-99 Health Care Facilities, 2012 Edition; NFPA-99C Medical Gas and Vacuum Systems Installation Handbook, 2012 Edition; ASSE Series 6000 Medical Gas Professional Qualifications Standard*

Sec	Location	Instructor
1	OE 142	L. Givens/M. Lewis
2	OE 121	L. Coleman/R. LeVangie

470 OSHA 500 Trainer Course for the Construction Industry

Prerequisite: Course 471-OSHA 510

This course certifies UA instructors to teach the OSHA 10-hour and OSHA 30-hour construction safety and health outreach programs at their respective locals. Special emphasis is placed on adult learning principals and training techniques to clearly identify, define, and explain construction industry hazards and will include acceptable corrective measures as required in the programs using 29 CFR 1926 OSHA Construction Standards as a guide. This course also covers the effective use of electronic visual aids and handouts. After successful completion of the course the student will be given a bag containing hands-on training materials to use in class, i.e. eye, ear, head and hand protection items. Go to http://uanet.org/pdf/dep/train/Prerequisite_Verification_Form.doc for a copy of the instructor's OSHA 510 certificate and verification form which is to be filled out and sent to traceyo@uanet.org before July 27, 2015.

Required text for this course: *OSHA 500 Manual; CFR 1926; Disaster Response DVD*

Sec	Location	Instructor
1	LA 242	J. Smith/M. Baptista

471 OSHA 510 Occupational Safety and Health Standards for the Construction Industry

This is the prerequisite course for Course 470, OSHA 500. This course covers the construction safety and health principles and OSHA policies, procedures and standards, as they apply to the construction industry. 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. As of September 1, 2011, all new instructors must have completed the OSHA 510 PRIOR to taking the OSHA 500 course. **OSHA is requiring this to ensure this prerequisite is met, along with the longstanding prerequisite of the instructors possessing five years of safety and health experience in the construction industry.** Effective immediately, each instructor attending an OSHA 500 course must fill out the form to verify these prerequisites.

Required text for this course: *OSHA 510 Manual; CFR 1926*

Sec	Location	Instructor
1	LA 278	J. Henderson/J. Young

472 Confined Space

This training is a combination of OSHA's (#2260) three-day confined space course and CPWR's two-day, hands-on simulated entry training. The OSHA 2260 course directs students to determine if a space is a confined space and will instruct the student as to how to properly classify each confined space as either permit-required or non-permit required. The course also allows students to determine which options—reclassification, alternate procedures or permit program—are effective at protecting workers entering permit spaces. Topics include: legal issues, permit programs, ventilation, and rescue. The course includes: workshops on confined space hazards and space classification. CPWR's hands-on training includes air monitoring, ventilation, supplied-air respirators (SARs), self-contained breathing apparatuses (SCBAs), entry procedures, retrieval, and other aspects of permit-required confined space entry. Participants who complete this course will receive: OSHA 2260 Certificate, CPWR 16-hour Confined Space Certificate and a CPWR Train-the-Trainer Certificate.

Sec	Location	Instructor
1	LA 259	CPWR

474 OSHA 502 Update for Construction Industry Outreach Trainers

Prerequisite: Course 470 – OSHA 500

This course is designed for instructors who have completed the Basic Instructor Course in Occupational Safety and Health Standards for the Construction Industry (OSHA 500). OSHA requires that these instructors stay current on OSHA standards, and they must take the OSHA 502 update course every four years to maintain their status. Course participants will be provided updates on topics such as OSHA Construction Standards and policies and regulations. After completion of the course, each participant will receive a certificate. OSHA will be notified that they have completed this course and met their obligation to stay current. Please send a copy of your OSHA 500 card to traceyo@uanet.org when registering for this course.

Required text for this course: *OSHA 500 Manual; CFR 1926; Diaster Response DVD*

Sec	Location	Instructor
1	LA 276	R. Neiderheiser/J. Hendrickson

The UA's Welder Certification Program, exclusively available through our signatory contractors, has quickly developed a reputation among facility owners for producing the most highly skilled and knowledgeable welders in the field. It is incumbent upon our UA instructors to pass these skills on to the next generation of apprentices and journey workers, which will prepare them for a bright future and maintain the superior quality of our training program.

As a reminder, the UA's welding courses are strictly "Train-the-Trainer" courses that are designed to increase local union welding instructors' proficiency in instructional techniques and materials. The courses are not designed to teach inexperienced individuals how to weld. Also refer to the 2015 Safety Requirements.

Course attendees must hold welder certifications in the specific welding process the course covers. The UA Registrar's office will verify all prospective attendees' certifications against the UA Welder Certification Database prior to enrolling the students in the course.

See UAnet.org for a complete listing of all UA weld tests and certification types.

Certification Fees

All certification course fees are the responsibility of the student. Listed below are the fee rates:

Backflow Certification Fees:
(Payable to ASSE International)
Repair and Survey Certification = $110.00
Recertification = $65.00
Surveys and Inspections for
Cross Connection Controls = $110.00

Medical Gas Certification Fees:
(Payable to NITC by July 17, 2015)
Certification = $116.00
Instructor Recertification = $48.65

UA STAR Exam Fees:
(Payable to NITC by July 17, 2015)
Certification = $136.00
Recertification = $83.65

Adult Basic Life Support/First Aid:
(Payable to Coyne First Aid)
Recertification = $110.00

Geothermal Certification Fee:
(Payable to IGSHPA)
Certification = $200.00

Energy Auditor Certification:
(Payable to NITC by July 17, 2015)
Certification = $76.00

Required Text Materials for Classroom Use

Note: You must bring the required material to class. If you do not have this material, the following items are available for purchase in the UA/IPT Bookstore, located in the Morris Lawrence building.

Course # / Description	Required Material
202 Methods in Teaching Trade Related Trigonometry	Preliminary Related Mathematics Manual (R/15); Piping Handbook and Offset Formulas
203 Methods in Teaching Pipe Trades Applied Mathematics	Related Mathematics Manual with CD (R/02); Related Mathematics Instructor CD; Preliminary Related Mathematics Manual (R/15); Piping Handbook and Offset Formulas
207 Copper Piping Systems, Advanced Installations, Specialized Design, and Safe Operation	Soldering and Brazing Manual (R/06); Soldering and Brazing Instructor CD
209 Methods in Teaching Related Science	Related Science Manual with CD (R/01); Related Science Instructor CD
210 Methods in Teaching Drawing Interpretation and Plan Reading	Drawing Interpretation and Plan Reading Set (R/00); Drawing Interpretation Instructor CD
214 Methods in Teaching Water Supply	Water Supply Manual (R/00); Water Supply Instructor CD
223 Plumbing Fixtures and Drainage	Plumbing Fixtures and Appliances Manual (R/01); Plumbing Fixtures Instructor CD; Drainage Manual; Drainage Instructor CD
225 Computer Aided Drafting (CAD) Level 1	AutoCAD 2013 Level 1
227 Computer Aided Drafting (CAD) Level 2	AutoCAD 2013 Level 2
231 Methods in Teaching the Green Professional Building Skills Training GPRO-UA	GPRO Fundamentals of Building Green; GPRO Plumbing; GPRO Mechanical
237 Adapting Apprenticeship to the 21st Century Students	Y in the Workplace: Managing the "Me First" Generation
240 Basic Electricity	Basic Electricity Manual (R/15)
243 HVACR Basic Electricity	Basic Electricity Manual (R/15)
250 Applied Drawing – Advanced	Advanced Plan Reading and Related Drawing Set; Advanced Plan Reading Instructor CD
251 Plumbing Code Application	Plumbing Code Application Manual (F/08); Plumbing Code Instructor CD (F/08)
257 Teaching Hydronic Heating and Cooling	Hydronic Heating and Cooling, (R/15)
258 Surveys and Inspections for Cross-Connection Controls	Backflow Prevention Reference Manual, Advanced Plan Reading and Related Drawing Set; Advanced Plan Reading Instructor CD
259 Backflow Repair and Maintenance	Backflow Prevention Reference Manual (R/11)
263 Delivering a Building Automation Program in HVACR	Building Controls (R/13)
265 Teaching HVACR Service Apprenticeship Curriculum	HVAC and Refrigeration Systems Training Manual, ATP (F/13); ExamView® (V/8.0)
266 Methods in Teaching Start, Test, and Balance	Start, Test, and Balance Manual (R/03); Start, Test, and Balance Instructor CD
267 Advanced Air and Water Analysis	Start, Test, and Balance Manual (R/03); Start, Test, and Balance Instructor CD
268 Technical Class for Sprinkler Fitters	NFPA 25 2014 Edition
274 Methods in Teaching Oxy-Acetylene Cutting and Welding	Oxy-Fuel Cutting and Welding and Shielded Metal-Arc Welding Manual (R/98);Oxy-Fuel Instructor CD
275 Methods in Teaching Advanced Orbital Tube Welding	Orbital Welding CD
283 Art of Tube Bending	Tube Bending Manual (R/13)
292 Instrumentation Level II Administrator and Implementing a Process Controls Instrument Technician Program	Instrumentation and Process Controls Manual (R/00);Instrumentation Instructor CD

297	Teaching with ExamView®	ExamView® (V/8.0)
312	Solar Water Heating System Installations	Solar Water Heating Installation Manual
317	Variable Refrigerant Flow-The CITY MULTI Service Course (VRF)	Mitsubishi CITY MULIT Service Course Book
329	Pump Service and Maintenance	Pumps Manual; Pumps Instructor CD
331	Medical Gas Refresher Course	NFPA-99, Health Care Facilities, 2015 Edition; NFPA Medical Gas and Vacuum Systems Installation Handbook, 2015 Edition; ASSE Series 6000 Medical Gas Professional Qualifications Standard
336	HVACR Performance and Compliance	Energy Audit Manual
362	Advanced Valve Repair Instructor Course	Advanced Valve Repair Manual; Advanced Valve Repair Instructor CD
371	Crane Signalperson Practical Examiner Accreditation	Signal Person Training Student Manual; Signal Person Instructor Manual with CD
377	Methods in Teaching the Plumbing Service Maintenance and Repair Manual	Plumbing Service Maintenance and Repair Manual (ATP) (F/11)
378	Methods in Teaching Plumbing Service and Customer Service	Plumbing Service Maintenance and Repair Manual (ATP) (F/11); MSCA Customer Service Skills Leader CD; UA Customer Service for the Residential Service Technician Video Modules; Customer Service Skills Flash Cards
385	Teaching the UA STAR Review	ExamView® (V/8.0)
398	Methods in Teaching Backflow Prevention	Backflow Prevention Reference Manual (R/11); ASSE/IAPMO Series 5000 Professional Qualification Standard (Latest Edition)
419	Industrial Rigging Technologies	Rigging Manual (R/04); IPT Crane and Rigging Handbook
420	Industrial Rigging Certification for Instructors	Rigging Manual (R/04); IPT Crane and Rigging Handbook
443	UA/MCAA Foreman Certification	Foreman Training Student Manual (R/13)
468	Medical Gas Instructor	NFPA-99, 2012 Edition Health Care Facilities; NFPA-99C, 2012 Edition Medical Gas and Vacuum Systems Installation Handbook; ASSE Series 6000 Medical Gas Professional Qualifications Standard
470	OSHA 500 Trainer Course for the Construction Industry	OSHA 500 Manual; CFR 1926; Disaster Response DVD
471	OSHA 510 Occupational Safety and Health Standards for the Construction Industry	OSHA 510 Manual; CFR 1926
474	OSHA 502 Update for Construction Industry Outreach Trainers	OSHA 502 Manual, CFR 1926; Disaster Response DVD
520	Labor History and the UA Part One: 1800 to 1920	The Rise of the United Association (Martin Segal)
521	Labor History and the UA Part Two: 1920 to the Present	Labor in America (Melvyn Dubosfky and Foster Reah Dulles); Skilled Hands, Strong Spirits (Grace Palladino); The United Association 1924-1989 (Barbara Griffith); DVD published by AFL-CIO Building Construction Trades Department “A Century of Leadership - Skilled Hands Strong Spirits 100 Year Anniversary” (1908 - 2008); Triangle Fire DVD (PBS, 2011); At the River I Stand DVD (1993) (recommended, but not required)

Acknowledgements

We gratefully acknowledge the participation of the following companies and organizations in the 2015 United Association Instructor Training Program.

AFCON
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Anthony Esposito, *Interim WCC UA Program Administrator*
Kim Billings, *Logistics Director of UA Programs and Services*

STUDENT SERVICES/INFORMATION DESK .....Morris J. Lawrence Building, Lobby
(734) 477-8989

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Ann Arbor Area Convention and Visitors Bureau ▪24-Hour Hotline ▪ 734.717.7282

To better serve you, the Washtenaw County hospitality community provides a 24-hour telephone hotline exclusively for UA members.

A specially trained representative from the Ann Arbor Area Convention and Visitors Bureau is on call 24 hours a day to handle your dining, accommodation, and transportation concerns.

Simply call 734.717.7282 and leave your name, call back number, and time of call. A representative will contact you within 60 minutes.

RECOMMENDED EMERGENCY CARE

Brent Bernier, DDS
Washtenaw General Dentistry
3075 W. Clark Rd.
Suite 209
Ypsilanti, MI 48197
(734) 434-6020

Ann Arbor Urgent Care
1000 E. Stadium Blvd.
Ann Arbor, MI 48105
(734) 769-3333

South Huron Urgent Care Center
1649 S. Huron St.
Ypsilanti, MI 48197
(734) 480-0990

St. Joseph Mercy Hospital
5301 E. Huron River Dr.
Ann Arbor, MI 48105
(734) 712-3456

<u>24-hour Pharmacy</u>
CVS Drug Store
3535 Plymouth Road
Ann Arbor, MI 48105
(734) 994-3636

Washtenaw Community College Campus Safety and Security
Parking Structure ▪ 4800 East Huron River Drive, Ann Arbor, Michigan
Telephone: 734.973.3411

The Office of Campus Safety and Security is located on the north side of the Parking Structure (PS) and is staffed 24 hours a day, 365 days a year.

If you need to report a medical emergency, a crime, or accident, please call 734.973.3411 (ext. 3411 from any campus phone). **After calling Campus Safety and Security, you must report the emergency to the ITF Office at 734.677.5133.**

If anyone off-campus needs to contact you for an emergency, please advise them to call 734.973.3411.

SERVICES PROVIDED

- Security will accompany individuals if needed
- Non-Emergency Medical Assists
- Motorist Assists
- Lost and Found

MEDICAL EMERGENCY

If you encounter a medical emergency on campus:

- Call Campus Safety and Security immediately.
- Stay with the person.
- Do not move the person unless absolutely necessary.
- If he/she has stopped breathing do not attempt CPR unless you have been trained.
- Never give anything to drink to an unconscious person.
- Try to avoid getting blood or other bodily fluids on you.

AUTOMATED ELECTRICAL DEFIBRILLATOR (AED) LOCATIONS

ML	Front Lobby Desk
OE	110 Hallway
SC	2nd floor Medical Room
TI	118 Reception
GM	1st floor Circulation Counter
PO	126 Main Security Office
LA	235 Hallway
GL	2nd floor across from offices

FIRE

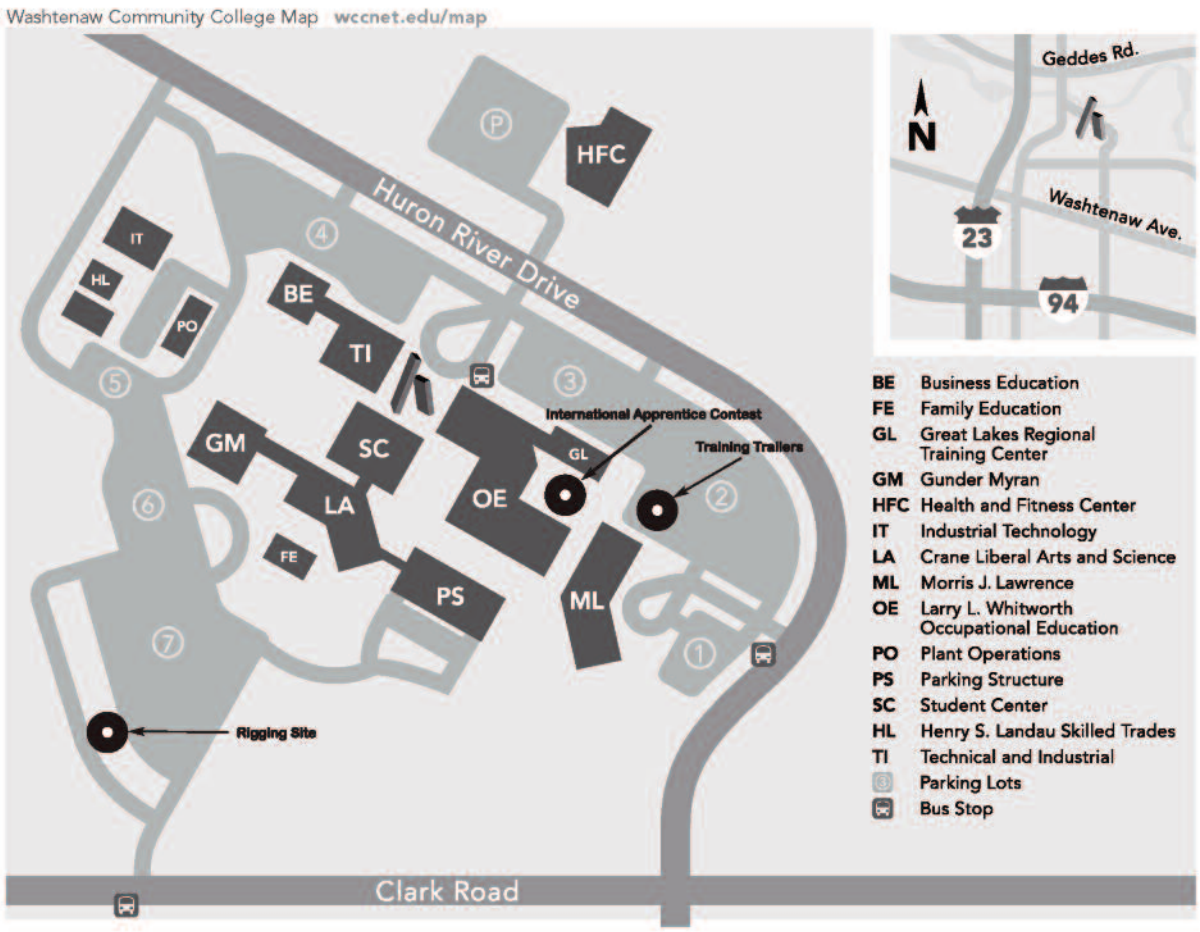
- Dial 3411.
- Pull the nearest fire alarm.
- Evacuate to your assembly area.

FIRE EXTINGUISHERS

Fire extinguishers are located throughout campus buildings. Reference Room Locator, for specific locations.

TORNADO

- Stay away from doors and windows.
- Take a flashlight with you if one is available.
- Go to the ground floor of the building.
- Do not go outside until the all clear is given.



Washtenaw Community College is a Smoke Free campus. No smoking on campus grounds.

The date for the 2016 Instructor Training Program is August 13-19, 2016.

UA University at Washtenaw Community College

UA University at Washtenaw Community College (WCC) is an education partnership between the UA and WCC to provide members with certificate and associate degree opportunities. As a benefit of the United Association-Washtenaw Community College partnership, UA Instructors will receive college credit for their coursework completed at the Instructor Training Program. These credits can be used to earn an Associate's Degree in Industrial Training. Additional degree requirements can be completed through WCC's online classes or transferred in from other higher-learning institutions.

To earn the Industrial Training Applied Science (AAS) or Associate of Science (AS) Degree, instructors will need to complete the following:

- UA Apprenticeship since August 1st 2000 or the UA STAR exam .....32 Credits
- UA Instructor Certification .....15 Credits
- 16-31 credits of general education requirements.....16-31 Credits

The Construction Supervision and Journeymen Industrial are certificate and degree options available to all UA members.

Washtenaw Community College's Online Classes

With more than 75 online classes in the innovative College on Demand™ format, WCC offers you the general education classes that you need to finish your Industrial Training Degree. Most classes are transferrable to a four-year college or university.

College on Demand™ provides you with a complete e-learning experience. You can watch online video lectures from industry professionals and WCC' s outstanding faculty when it is convenient for you and as often as you want. Interactive learning activities and online collaborative tools reinforce and apply important course concepts. You can take your test and submit all of your assignments online, saving you time and the expense of driving to campus.

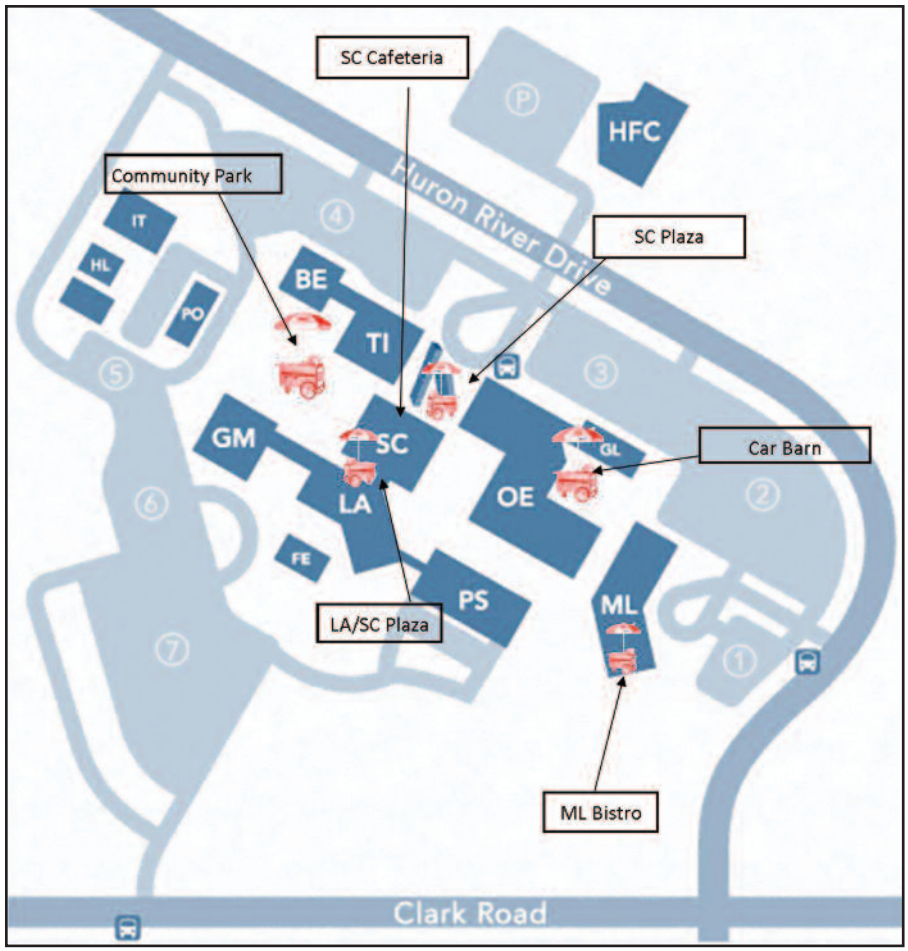
Online learners do need to be independent, motivated and self-starters. Online classes do have deadlines. But because the virtual classroom is available 24 hours a day, seven days a week, you have the flexibility of scheduling study/class time during different hours than work or family time. Attend class anywhere you have a computer with access to high speed internet to meet your academic goals.

The Introduction to Online Learning class is your first step for taking online classes and prepares you for successful e-learning. Two weeks and completely online, key topics include navigating the virtual classroom, online library research and test taking strategies. You will also complete the WCC's admissions process in this class. Registration is as simple as filling out a form at http://tinyw.cc/intro-unions**.** You can get started upon verification of your UA membership, usually 24-48 hours.

Contacts

Please contact WCC Student Services for any questions about UA University @Washtenaw Community College degree programs.
Michael Griffith, WCC-UA Student Services Coordinator
Nancy Jones, WCC-UA Data Technician
Telephone: 1-888-232-5476
UA University Website: www.wccnet.edu/uauniversity

Campus Food Service Areas



ML Bistro (inside)
Made-to-order Sandwiches, Salad Bar,
Soup, Chips, Drinks

SC Plaza
Assorted Hot Dogs, Brats,
Kielbasas, Chips, Drinks

LA/SC Plaza
Assorted Hot Dogs, Brats,
Kielbasas, Chips, Drinks

Car Barn Cart
Assorted Hot Dogs, Brats,
Kielbasas, Chips, Drinks

Community Park Tent
Dominos Pizzas
Famous Dave's BBQ
Grilled Hamburgers
Chicken Sandwiches
Assorted Tex-Mex Burritos

SC Cafeteria (inside)
7:00 am - 5:00 pm
The Java Spot (pastries, bagels, pre-made salads and sandwiches)

11:30 am - 1:00 pm
Food Court
Sunday through Wednesday
Subway, Cottage Inn Pizza

Additional Options Monday Through Wednesday

Monday
Philly Cheese Steaks

Tuesday
Patty Melt Meal

Wednesday
Pulled BBQ Chicken Sandwich Meal

Hours of Operation: 11:30 am - 1:00 pm, Sunday, August 9th - Wednesday, August 12th

Sponsored by the Ypsilanti Area Convention & Visitors Bureau

welcome INSTRUCTOR TRAINING PROGRAM PARTICIPANTS

NO ENTRY FEE

• • •

Chance to win a
$250 Harley Davidson Gift Card

• • •

All Car & Bike Show participants will receive a customized placard for the show. Stop by the YACVB Welcome Tent

Enjoy an evening in Ypsilanti's Depot Town

6:00 - 9:00PM // SUNDAY // AUGUST 9, 2015
5 EAST CROSS STREET // YPSILANTI, MICHIGAN

Bring your custom car, hot rod, classic car or motorcycle (rain or shine) to the free evening event in historic Depot Town, Ypsilanti. Take a stroll and enjoy the cars and motorcycles as you catch up with friends. Dine in the restaurants and shop in the businesses that line Cross Street.

visitypsinow.com
#visitypsi

Questions? Call us today!
734.483.4444

ANN ARBOR
Area Convention and Visitors Bureau

BEER. CHEER. HOMETOWN GEAR.

DRESS TO SHOW YOUR HOME TEAM SPIRIT AT UA'S ANNUAL BLOCK PARTY.

SPORT YOUR FAVORITE HOMETOWN TEAM APPAREL!

MONDAY, AUGUST 10, 2015

6-10pm on Main Street in Downtown Ann Arbor

Live Entertainment by The Milwaukee Tool Shed Band
"The Big Flush" – 2nd Annual Toilet Races
4th Annual UA 5K Race and Pub Crawl to Benefit the Semper Fi Fund
Dining in the Streets

UNITED ASSOCIATION
VETERANS IN PIPING

FOR MORE INFORMATION GO TO
WWW.WELCOMEUA.VISITANNARBOR.ORG

To Benefit
SEMPER FI FUND
AMERICA'S FUND

main street area association

USA's 2nd Annual
UA Ann Arbor
Conservation Dinner

Tuesday
August 11, 2015
Ann Arbor, MI

You're Cordially Invited

We invite you to participate in the Union Sportsmen's Alliance 2nd Annual Ann Arbor Conservation Dinner.

Reserve a seat today or become a table sponsor and help support USA's mission to unite the union community through conservation to preserve North America's outdoor heritage… all while supporting an evening of camaraderie and fun with your union brothers and sisters.

A Portion of the Proceeds will go to Benefit the "Semper Fi Fund."

LIMITED SEATING
First Come First Served!

Sponsorship Levels **All include a table for 10*

Bronze Sponsor - $1,500.00 (1 table gun) **Silver Sponsor** - $3,000 (2 table guns)
Gold Sponsor - $5,000.00 (3 table guns) **Platinum Sponsor** - $10,000.00 (5 table guns)

EVENT DETAILS

DATE: Tuesday, August 11, 2015
TIME: Doors open at 6:00 PM
LOCATION: Sheraton Ann Arbor
3200 Boardwalk
Ann Arbor, MI 48108
COST: $50 per person
INCLUDED: Dinner / Gift
One-Year USA Membership
RSVP: Lisa Boston / lisab@unionsportsmen.org
615-831-6793
PAYMENT: Please make checks payable to:
Union Sportsmen's Alliance
MAIL TO: Union Sportsmen's Alliance
c/o Lisa Boston
235 Noah Drive, Suite 200
Franklin, TN 37064

SPONSOR A TABLE

Sponsor a Table of 10 for dinner, and you offer the chance for someone seated there to win a gun!

COST: $1,500 for a table of 10
INCLUDED: Dinner for 10
(Provide guest list on back.) →

Planning to Sponsor a Table? Please send in your Order Form Even if you do not have your list of attendees complete.

Chance for anyone seated at your table to win a **Remington 870 Express 12 Gauge Shotgun**
Union made by UMWA Local 717 Ilion, NY

Gifts for 10
Program listing

Guns, knives, gear and more up for grabs in various raffles and auctions!

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