

# UNITED ASSOCIATION TRAINING (UAT)

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## UAT 000 UA No Approved Course Number (0 Credits)

### UAT 109 Effective Instructional Practices & Coaching (UA 1020) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will use evidence-based strategies and effective instructional practices to design and deliver instruction that meets and supports the needs of adult student learners. Students will incorporate coaching skills to provide guidance, documented assessments, clear and specific feedback, facilitate discussion, and establish learning goals and objectives to create a culture of professional development for improved student outcomes. Students will also present a topic for peer review using learned strategies. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 110 UA/MCAA Foreman Certification (UA 2012) (3 Credits)

45 lecture, 3 lab, 3 total contact hours

In this course, students will identify and complete the UA/MCAA Foreman Certification Exam. Students will utilize instructor presentations and student group discussions to develop methods for workplace and jobsite supervision. Students will also review and demonstrate the elements of the UA/MCAA Foreman Certification Exam as well as locate and navigate instructional resources to deliver course information at the local Training Center. The title of this course was previously UA/MCA Foreman Certification. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 111 Introduction to Industrial Teacher Training (3 Credits)

45 lecture, 3 lab, 3 total contact hours

This course will focus on the principles of learning, elements of trade teaching and the methods of teaching an applied technical skill. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

### UAT 111A Principles of Learning in Trade (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

After an examination of learning theory and the principles of learning, students examine the elements of trade teaching for the purpose of developing teaching strategies and techniques that can be incorporated into his/her personal teaching style. Topics include definitions of kinds of learning, implications for readiness, transfer, retention, and motivation. Trade teaching topics to be covered include goals of trade education, nature of content, trade teaching process, and managing the learning environment. Level I Prerequisite: Admission to Industrial Training program

### UAT 112 Jobsite Leadership in the 21st Century for the Piping Industry (UA 2013) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, the student will incorporate new techniques of jobsite leadership responsibility with existing practices to better communicate with today's generation of workers. Participants in this course will also explore the traits and skills needed to lead in the classroom as an effective instructor and in the field as an effective supervisor. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 113 Safe Bolting Practices (UA 2154) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify and perform bolted joint assembly in accordance with American Society of Mechanical Engineers (ASME PCC-1) standards. Topics include torque, tension and friction, and their effect on the bolted joint. Students will use classroom theory and hands-on demonstrations for bolted joint components, including the factors of torque control by the assembler. In addition, students will demonstrate safe operation of powered torque and tension equipment. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 114 Safety Leadership (UA 2155) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, United Association members will develop strong safety practices and communication skills to become UA Safety Leaders. Students will be trained to work with crews, contractors, and owners on large-scale construction projects to provide safety coordination and communication in the workplace. Students will establish procedures for interventions for non-compliance of OSHA safety regulations. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 115 Emerging Safety Technology (UA 2156) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will recognize emerging technological advances in safety equipment being made in the construction industry. Students will interpret the functions, benefits, costs, and proper use of the new wearable technology. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 116 Advanced Revit (UA 3026) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will utilize the latest Autodesk Revit software and explore the advanced uses of Autodesk Revit MEP as a complete design-to-fabrication VDC/BIM (Virtual Design Construction/Building Information Modeling) tool for the pipe trades. This hands-on course will introduce them to advanced methods of pipe routing. In addition, students will learn how a coordinated model is processed into installation shop drawings, spool maps, and fabrication spool sheets. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 116A Revit Add-Ons (UA 3029) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review and the use of common Revit Mechanical Electrical Plumbing (MEP) add-ons including Trimble Sysque, Victaulic Tools, Stratus, M-Suite and augmented reality plugin software Augmentecture. Students will be able to build a model and produce construction documents using each software's workflow and export that model to Augmentecture to visualize it in augmented reality. Basic concepts and operation of Revit is required. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

### UAT 117 Robotic Total Station Layout-Leica (UA 3032) (1.5 Credits)

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students focus on using the Leica Robotic Total Station. Participants will learn setup, layout, and Quality Assistance/Quality Control (QA/QC) with an emphasis on hands-on learning the latest equipment and software. Training will include how to verify building control points to other levels of a structure, load layout points from a model into the total station, and load points back into the model. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 118 Clamping, Reforming, and Pipe Aligning (UA 5023) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be taught the various types of clamps used in the fabrication and installation of piping systems. Application-based training for the proper selection of clamps used to perform various pipe joining configuration will be emphasized. Lab exercises will focus on the proper use of pipe clamps, including safety, clamp set-up, joint fit verification, and preventative maintenance of equipment. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 119 HVACR Residential Technician (UA 6028) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will focus on performance testing of residential Heating, Ventilation, Air Conditioning, Refrigeration (HVACR) equipment, measuring and analyzing of data for air flow, water flow, and electrical power input. Students will perform practical exercises on testing equipment training modules and/or functional building equipment. Upon completion, students are required to submit documentation on two field performance tests from their training center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 120 Principles of Project Management (UA 2015) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students examine construction project management and the responsibilities of a project manager. Students will be able to define and chart the life cycle of a construction project from conception to completion, including estimates, templates, and warranty items. Administrative processes and responsibilities of trade and business are explained and discussed using a sample project and flow chart. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 121 Industrial Teacher Training II (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course will focus on developing instructional objectives, planning and presenting related information lessons and the methods of teaching a second applied technical skill. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 122 Adapting Apprenticeship to the 21st Century (UA 2100) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine the generational characteristics and relationships among coordinators, instructors, and younger apprentices. Presenters from the training industry will discuss common problems and possible solutions to better communicate and recruit Gen Y (born 1980-1994) for the skilled trade industry. In addition, there will be discussions of available resources on how to effectively recruit future generations, including Gen Z (born 1995-2015) and beyond. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 123 Fall Protection (UA 2158) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review the OSHA (Occupational Safety and Health Administration) policies regarding fall protection by focusing on ANSI Z359.2 and USACE EM-385.1-1 standards. This course focuses on workers' safety while working at heights and the systems used to protect workers from falls. The student will obtain instructional materials to conduct the EM 385 Competent Person and Authorized Person courses. Upon successful completion of the course, the student will receive a certification of OSHA 3115 Fall Protection course and meet or exceed ANSI and USACE requirements as a Competent Person and Competent Person Trainer. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 124 Trenching and Excavation - Competent Person Trainer (UA 2159) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine the current Occupational Safety and Health Administration (OSHA) Trenching and Excavation Standards used in the construction industry. Students will utilize newly-developed technology such as interactive e-learning modules, job site mobile apps, and complete trainer guides. This course involves classroom theory as well as hands-on interaction. Upon completion, students will be able to teach certified competent person level training at their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; OSHA 500 or OSHA 502 certification card

**UAT 125 Introduction to CAD (UA 3019) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will comprehend introductory concepts of Computer-Aided Drafting and the environment and techniques of CAD instruction. The course emphasizes the fundamentals of AutoCAD software, as well as the creation and modification of two-dimensional objects. Instructions on creating and using drawing and template files, creating layers, annotation, dimensioning, and printing drawings will be included. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 126 Autodesk Fabrication CADmep (UA 3024) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review functions and features of Autodesk Fabrication CADmep software. Students will study basic 3D models as well as prepare field drawings and procurement documents. Upon completion, students will create documents for prefabrication of piping, custom fabrication using Fabrication CADmep and shop drawings with annotation spool drawings. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 127 Comprehensive Management of New Refrigerants, Regulations, and Safety Issues (UA 6022) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will focus on refrigerant management safety and the changes the EPA (Environmental Protection Agency) is developing for the section 608 of the Clean Air Act. Students will be able to distinguish between the standard HFC (HCFC) refrigerants and the new HC and HFO refrigerants, their retrofits, and proper handling as per ASHRAE Standard, as applied to the refrigeration and cooling industry. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 128 Troubleshooting Residential HVACR Systems (UA 6061) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify proper installation, start-up, and commissioning of a residential Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) systems. Students will also apply both a classroom and hands-on approach to testing and troubleshooting new and existing systems for proper operation. They will review instructional resources and activities that can be applied at their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 129 Servicing Residential HVACR Electrical Systems (UA 6064) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify common electrical terms and ordinary methods used in residential HVACR wiring. Electrical plans will be reviewed to illustrate proper installation techniques as well as the electrical safety involved. A hands-on lab will allow students to install and test residential electrical components. Participants will also be introduced to the UA software (UA Circuit Builder) developed for use on Blackboard and the resources available in the Instructor Resource Library (IRL). Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 130 Fire Pump Inspection, Testing, Maintenance, and Repair (UA 7040) (3 Credits)**

45 lecture, 3 total contact hours

In this course, students will learn proper procedures and develop methods needed to teach the operation, inspection, testing, maintenance, and repair of fire pumps. Students will also be introduced to the code requirements per National Fire Protection Association NFPA 20 and NFPA 25 as well as plotting pump curves necessary for proper fire pump operation. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 131 Industrial Teacher Training III (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course will focus on the development of written tests, an elective professional skill and a third teaching demonstration in a technical skill area. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 132 Understanding Fire Alarm Panels and Initiating Devices of Fire Protection Systems (UA 7060) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students study fire alarm electrical circuits and fire control panels that pertain to fire protection sprinkler systems. Students will review the concepts of low voltage electricity as well as identify electrical testing methods for alarm devices within the fire alarm system. In addition, students will also demonstrate the hands-on installation, operation, troubleshooting and repairing procedures of these devices with the system. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 133 AWS-CWI Preview (UA 8041) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students gain the information and skills required to successfully complete the application process for the AWS-CWI (American Welding Society-Certified Welding Instructor) credentials in accordance with the AWS QC1 standard. Students will also develop skills to prepare for the 60 hour United Association Prep Course and Exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 134 Safety Culture Training for Front Line Leaders (UA 2161) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop materials and methods to instruct front line leaders in the construction industry and to establish a collaborative safety culture for employees to report their safety concerns. Through a combination of lecture, demonstration, case study, group exercises, facilitated discussion, and teach-backs with instructor evaluation, the course prepares the students to instruct an 8-hour course for front line leaders at their local training facility. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 135 Industrial Rigging Certification (UA 5011) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will identify and develop methods for incorporating a rigging course and curriculum taught at their local Training Center. Students will define and demonstrate safe rigging practices, virtual and actual hand-signaling, crane and equipment set-up, sling stress and center of gravity calculations. In addition, students will prepare for and take the Electrical Power Research Institute (EPRI) certification exam on rigging. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 136 Daikin VRV Systems (UA 6013) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will study the Daikin variable refrigerant volume (VRV) system, a multi-split type air conditioner that uses VRV control. Through classroom and hands-on activities, students will cover the history, installation, and VRV technology, including 401A refrigerant and the piping required. In addition, students will review the electrical and VRV control requirements, wiring, and net communications including simulation software available for use at their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 137 Radiographic Film Interpretation (UA 8011) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will acquire the basic skills and techniques required to view and interpret radiographic films (x-rays) as they relate to the welding industry. Students will be introduced to the theory and hands-on practical labs for interpreting x-ray films to access the quality of piping welds as well as installation, calibration, operation, and maintenance of equipment. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 138 Apprentice Standard Guidelines (UA 9001) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students take an in-depth look at apprenticeship standards and how they can affect the operation of a United Association local training program. Students will cover the United Association National Guideline Standards developed by the International Pipe Trades Joint Committee as well as regulations put into place by the U.S. Department of Labor under 29 CFR 29.29 and 29 CFR 29. The course will involve group discussions on apprenticeship standards. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 139 Administration of a Jointly Managed Training Program (UA 9002) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be provided with an overview of managing and administering a United Association training program. Through a combination of lecture and discussion, students will examine industry trends, laws affecting training programs, instructional methods and curriculum requirements. Students will also review the Council of Occupational Education (COE) accreditation process and the benefits of UA accreditation of their apprenticeship programs. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; UAT 138 may enroll concurrently

**UAT 140 Occupational Safety and Health (UA 2150) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn the safety and health principles and OSHA policies, procedures and standards as they apply to the construction industry. Special emphasis is placed on those areas that are the most hazardous, using OSHA standards as a guide. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 141 Industrial Teacher Training IV (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course will focus on discussion and interaction techniques, an elective professional skill and the teaching methods in a fourth technical skill area. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 142 Using the Multi-Craft Core Curriculum (UA 9008) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students are introduced to an overview of the Multi-Craft Core Curriculum (MC3) as developed by North America's Building Trades Union (NABTU). Students will outline different industry crafts, basic math, OSHA regulations, and trade skills associated with union labor. The MC3 curriculum is utilized in schools, colleges, and adult re-entry programs to prepare students for an Apprenticeship Readiness Program for careers in the construction trades. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 143 Veterans In Apprenticeship (UA 9007) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the framework of the United Association Veterans in Piping (VIP) program for UA apprenticeship. Students will review policies and procedures of the Veterans' Administration (VA), Department of Defense (DOD), as well as the benefits of the Montgomery GI Bill, Post 9/11 GI Bill, DD214, and Military Occupational Specialty (MOS). In addition, students will become familiar with Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI) that can affect classroom learning. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 144 Legal Issues and Fiduciary Responsibilities (UA 9003) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine the legal and fiduciary responsibilities that exist when operating a jointly-managed United Association (UA) training program. Discussions will be held on trust documents, legal documentation, prohibited transactions, and limited usage of grants. Other topics covered will include state and federal employment laws, Civil Rights Act, discrimination and harassment, and the Americans with Disabilities Act, which relate to apprenticeship program operation. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 145 Teaching U.A. STAR Review (UA 2014) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop the skills needed to create a 16-hour preparation course for the UA STAR certification exams in HVACR, steam fitting/pipefitting and plumbing. Students will learn how to utilize online interactive review materials for the UA STAR exam. In the final four hours of the class, students will take the NITC proctored UA STAR exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 146 Introduction to Microturbines (UA 6011) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will study the operation and installation of Combined Heat and Power (CHP) systems using microturbines. Students will calculate heat and power applications as well as identify adaptations needed to retrofit standard heating systems in commercial buildings and industrial settings. It is recommended that students have prior knowledge of the operating principals of CHP systems to participate in the course. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 147 Safe Pressure Testing for Piping Systems (UA 2160) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify and demonstrate safe working practices required to plan, execute, and document pressure tests on industrial plumbing and industrial refrigeration piping systems. Pressure test demonstrations will use a combination of detailed images, videos, and interactive, hands-on exercises. In addition, students will present interactive pressure testing activities that can be used at their local Training Centers. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 148 Intermediate Computer Skills for the Trade Teacher (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students continue to develop computer skills needed for teaching in the trades. Students acquire skills in document and spreadsheet creation using MS Word and MS Excel, respectively. In addition, students explore the benefits of using web-based applications such as Google Docs and Google Sheets. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; UAT 222 minimum grade "C" or equivalent knowledge of computer skills

**UAT 149 Introduction to Service Management (UA 2016) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will recognize the duties and responsibilities of management in the mechanical service industry. Students will demonstrate their leadership abilities and reviewing the day-to-day duties of a leader and a manager. In addition, students will have interactive sessions to identify skills in dispatch, sales, finances, and scheduling. An emphasis will be placed on communication skills and resolving conflict in the workplace. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 150 Incorporating Pipe Pre-Fabrication into Apprenticeship (UA 5016) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the journeyman pipe fabricator's roles and responsibilities in the growing trend of journeyman fabricators in the pipe industry today. Students will utilize methods and procedures used to prefabricate welded pipe from concept to completion in both the shop and field environments. In addition, students will then develop a fabricator lesson plan for a course that can be used at their home Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 151 Industrial Teacher Training V (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course will focus on innovations and problems in trade teaching, an elective professional skill and methods of teaching in a fifth technical skill area. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 152 Utilizing Jobsite Technology (UA 3050) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to current technology and equipment being used in construction projects. Students will perform hands-on demonstrations that include reality capture cameras, 3-D laser scanners, and robotic total station layout, as well as current tool and mobile technologies for the jobsite. In addition, students will review field-related augmented reality and compare cost return on investment (ROI) of this technology to standard practices in construction. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 153 Robotic Station Layout Topcon (UA 3031) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be exposed to the effective operation of a robotic station layout (RSL) as it applies to the construction jobsite. Students will discuss the technological advantages of the RSL system and compare and contrast the system to standard blueprints. Students will review available models of robotic station systems and software and incorporate their selection into a training plan. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 154 Safe Handling of Refrigerants (UA 6029) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify potential hazards of refrigerants in HVACR equipment which can include toxicity, flammability, asphyxiation, and physical hazards. In addition, students will determine system design, engineering controls, and other techniques that might mitigate the risks involved in using refrigeration in various types of equipment. This course will cover EPA criteria and testing for section 608, as well as ASHRAE standards 15 and 34. Students will create lesson plans to be used at local training facility to prepare others for the EPA exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 155 Precision Weld Preparation and Field Machining of Pipe (UA 5024) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will adapt their existing pipefitting weld preparation practices with the growing demands of heavy industrial work safety practices when using precision weld preparation equipment. Students will gain hands-on experience using Tri Tool and E.H. Wachs heavy wall machining equipment with emphasis placed on operation and safety. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 156 Commercial and Residential Boiler Service (UA 6063) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify proper installation and service requirements of standard and high efficiency boilers in both the commercial and residential markets. Students will differentiate types of boiler designs, applications, and piping systems, including the modifications needed for replacing older boilers with new condensing types. Students will also identify various controls, read schematics, as well as perform basic combustion and troubleshooting skills. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 157 Smart Home Technology (UA 6065) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will demonstrate the ability to interface electronic and mechanical devices for the residential smart-home service market. Devices covered will include security monitoring capabilities, temperature modulation and control, lighting and access control, along with remote building monitoring. Device installation and commissioning will also be covered in the hands-on lab portion of this course. Limited to approved union program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 158 Pump Installation Service and Maintenance (UA 6017) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will recognize and evaluate proper pump selection and installation for various piping systems. Students will focus on pump performance, including pump curves, as well as operating characteristics and installation practices. Proper servicing techniques, repair procedures, and laser alignment methods will be discussed and demonstrated in a hands-on lab using manufacturers' recommendations. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 159 Teaching HVACR Service Apprenticeship Curriculum (UA 6000) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course is intended to assist students in developing and presenting classroom instruction in the subtopics relating to the five-year Heating, Ventilating, Air Conditioning, and Refrigeration (HVACR) Apprenticeship Training Program. Students will identify the subject matter that makes up a five-year program along with the creation of a syllabus and lesson plan to be used as a model at their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 160 Implementing a Gas Distribution System (UA 5025) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will demonstrate the process and procedures involved in electrofusion of pipe joint connections of plastic gas distribution lines used in the installation for residential meter settings. They will perform manual fusion, hydraulic butt fusion, sidewall fusion, and line taps under pressure (hot taps). Students will take the McElroy instrument certification exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 161A Technical Seminar (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course will focus on the methods of teaching a technical skill area. Special approval required and will replace UAT 121, 131, 141, or 151. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 161B Technical Seminar (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course will focus on the methods of teaching a technical skill area. Special approval required and will replace UAT 121, 131, 141, or 151. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 162 Occupational Safety and Health (UA 2150) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will identify the Occupational Safety and Health Administration (OSHA) 510 Standards and locate resources to supplement safety programs at their local Training Center. Topics include the application of the OSHA Construction Standards for safety and health with an emphasis on construction hazards. Students will define construction terms, identify hazards which occur in the construction industry, as well as determine appropriate OSHA policies and procedures in a classroom and hands-on environment. This course contains material previously taught in UAT 140. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 163 NFPA® 70E® Electrical Safety (UA 2163) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify electrical safety hazards in the workplace to reduce or eliminate workers' exposure to those hazards. Students will participate in instructional activities including hands-on exercises, videos, and review of relevant policies and procedures in compliance with Occupational Safety and Health Administration (OSHA) 1910 Subpart S and OSHA 1926 Subpart K and National Fire Protection Association (NFPA)® 70E®. Students will create a project safety plan for jobsite electrical hazards. Upon successful completion of this course, students will be prepared to facilitate the 1-Day NFPA 70 E class. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 164 NAUSC Shop Steward Course TTT (UA 2191) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify and demonstrate the Shop Steward's roles and responsibilities to provide training for all National Association of Union Schools and Colleges (NAUSC) Shop Steward certification programs across Canada. Students will review the history of the United Association (UA), UA Standard for Excellence, UA Constitution and policies in relationship to the critical role of a jobsite steward. Emphasis will be placed on methods for working with management and union members toward a more productive job site while ensuring that workplace issues and conflicts do not interfere with operations and productivity. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 165 Equal Opportunity and Equitable Practices in Apprenticeship (UA 2105) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will work to establish a professional and inclusive environment, providing uniform guidance to encourage and maintain positive and inclusive environments at local training centers. Topics will include diversity, equity, and inclusion (DEI), as related to equal opportunity, protected classes, anti-harassment, and discrimination. Students will apply practical examples, group exercises, and ethical decision-making discussions encompassing diversity, equity, and inclusion. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 166 Applied Water (UA 2120) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify, analyze, and evaluate sources of water contamination in designed water systems including piping, delivery, and storage. Students will apply scientific methods and knowledge of water characteristics for practical applications as well as documentation with the proper nomenclature. In addition, students will identify proper test selection procedures, hands-on test procedures, and analyze test results for preventative maintenance and incident response techniques. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 168 Introduction to REVIT (UA 3025) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the Autodesk Revit Mechanical, Electrical, Plumbing (MEP) software as a design, collaboration, coordination, communication and fabrication tool for the construction industry. Students will learn how to utilize a 3-D model to coordinate installation drawings and fabrication spool sheets. In addition, students will discuss the advantages of implementing Revit software training at the local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 169 Mobile Technology (UA 3055) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine current mobile technologies and applications that are available for use in the construction industry. Students will explore resources as well as develop and utilize a plan to integrate these technologies into apprenticeship programs at their local Training Centers. In addition, students will present a five-minute lesson plan for class discussion and critique. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 170 Introduction to Teaching Online Using Blackboard (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will create a customized Blackboard course using some of the basic content areas in a blank Blackboard course site. Students will identify various file types and online resources that can be used to create the course. Also, students will add users to their course as well as create and publish a test from a pool of written and downloaded questions. Students will evaluate added users and create final averages including downloading their gradebooks. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 171A Distance Learning Teaching Techniques (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course covers the use of interactive television and other distance learning techniques. Students learn presentation techniques for instructors and learn to plan distance learning classes. Methods for converting conventional class materials into a format suited for distance learning are covered. This course also covers the use of Internet pages, e-mail, chat rooms, telecourses, audiotapes, and instructor-created videotapes in support of a distance learning program. In addition, students gain hands-on experience using interactive television equipment. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 171B On-Line Teaching Techniques (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course covers the use of the Internet in teaching. Forums, on-line teaching, chat rooms, on-line assignments, e-mail, and other Internet features are explained and demonstrated. These Internet teaching techniques can be used with courses offered completely on-line or to supplement traditional classroom courses. Methods for converting traditional class materials into an on-line format are emphasized. Procedures and standards for web page creation and maintenance are also presented. Students gain hands-on experience in creating on-line course materials and uploading to a server. Level I Prerequisite: Academic Reading and Writing Levels of 6; Admission to Industrial Training program

**UAT 171C Robotic Total Station-Trimble (UA 3033) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will study the setup, layout, operation, and troubleshooting of the Trimble Robotic Total Station with an emphasis on hands-on application using the latest equipment and software. Students will be able to identify, establish, and verify Building Control Points of single and multi-level structures. Students will also recognize the methods of loading layout points as well as loading built points in a given model into the total station. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 172 Utilizing UA Classroom Techniques (UA 3007) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop skills to effectively teach the next generation's workforce through hands-on approaches and interactive teaching tools. Students will be exposed to the current virtual reality, augmented reality, and online resources along with demonstrations utilizing smartboards and construction applications developed by the United Association International Training Fund (UAITF). Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 173 BIM-VDC Workflow in the Construction Industry (UA 3100) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine the Building Information Management (BIM) process and determine how it fits into the Virtual Design and Construction (VDC) workflow. Students will demonstrate the VDC workflow on a small project for the plumbing, mechanical and fire protection industries. In addition, students will examine how a BIM project follows the workflow process from conception to installation. Students will implement materials and models in various VDC courses at local Training Centers. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 174 Laser Scanning: Reality Capture for Construction (UA 3035) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will use laser scanning equipment and related software to create 3D point clouds of existing buildings and Mechanical, Electrical, and Plumbing (MEP) systems, using Building Information Modeling (BIM) applications for use at local Training Centers. As part of a hands-on lab, students will scan an existing mechanical equipment room, and point clouds will be produced for spatial coordination and as-built applications utilizing available software. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 175 Utilizing Revit® for UA Training (UA 3095) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will create 2 and 3 dimensional piping models using Autodesk Revit® software. Students will create project plans and develop isometric and elevation drawings, which can be annotated and saved as PDFs. These models can be used for training exercises and lessons in their instructional courses at their local Training Centers. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 176 Addressing Barriers to Apprentice Success (UA 9006) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop skills to improve communication with apprentices at their local Training Center. By using real-life scenarios, students will learn how to address a variety of issues related to cultural diversity, emotional intelligence, distress or emotional dysregulation, violence, and substance abuse. In addition, students will develop skills to enhance the coordinator/apprentice relationship, like reflective listening, open-ended questions and motivational techniques. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 177 Victaulic Vortex System Training (UA 7001) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course students will learn detailed information on the Victaulic Vortex system, including the installation process, design guidelines, basic functions and operations, as well as how to place the system in maintenance mode for servicing. Students will develop an understanding of the science upon which the system was built as well as demonstrate proper installation and testing methods. Inspection Testing and Maintenance (ITM) for Victaulic Vortex Systems will be discussed as well as the requirements for NFPA 770. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 178 Viking Foam Fire Protection System Training (UA 7002) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the components and operation of Viking Foam Fire Protection Systems and is intended for students who want to add this training to their local Training Centers. This hands-on course will cover installation requirements for Viking foam systems along with proper operation and setup. Students will perform inspections and tests to better understand how to troubleshoot, repair and maintain Viking Foam protection systems. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 179 Reliable Automatic Fire Sprinkler Valve Training (UA 7032) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will gain the essential skills needed to qualify members in the installation, troubleshooting, and repair of Reliable Automatic Fire Protection valves and essential components at their local Training Center. Students will explore the history of Reliable Automatic Sprinkler Corporation and current fire protection valves and equipment in this combination of classroom and hands-on learning environments. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 180 National Fire Protection Association (NFPA) Codes (UA 7070) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will become proficient with the National Fire Protection Association (NFPA) standards, including how they are developed and the rules that govern them. Students will review the make-up of NFPA technical committees and their responsibilities, how the consensus mechanism works, and the course of actions required to apply for technical committee positions. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 181 Fire Pumps and Inspection (UA 7041) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn teaching methods, working procedures and skills involved in the proper installation, inspection, and testing of various types of Aurora fire pumps. The course includes hands-on workshops in which participants will inspect, test, adjust, and troubleshoot problems, as well as perform a pump test. Furthermore, this course will also address code requirements for National Fire Protection Association (NFPA) 20, 25, and Protective Personal Equipment (PPE) for NFPA 75. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 182 Fire Pump Installation, Repair, and Maintenance (UA 7042) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop skills for the installation, maintenance and repair of Aurora fire pumps. Hands-on activities include disassembling and reassembling of fire pumps as well as troubleshooting and repair. Students will refer to code requirements per National Fire Protection Association (NFPA) 20 and NFPA 25 for installation, repair and maintenance for fire pumps along with requirements for proper Personal Protection Equipment (PPE) per NFPA 70E. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 183 Revit for Fire Protection I (UA 7025) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will use Autodesk Revit Building Information Modeling (BIM) technology to create digital fire protection systems to be used at their local Training Center. Students will focus on the life safety systems used in the fire protection industry using HydraCAD for Revit. This course for virtual installation of wet and dry sprinkler systems will include subjects such as sprinkler location, hanging and bracing, system components, along with an introduction into hydraulic calculations. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 184 Revit for Fire Protection II (UA 7026) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will further study Autodesk Revit Building Information Management (BIM) integration as well as recognize current clash detection options through Navisworks. Students will identify the BIM workflow and the challenges faced by the detailers in the collaboration of Fire Protection Systems (FPS) with other trades. Fabrication and stock listing ability of HydraCAD for Revit will also be explored. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 185 Inspection, Testing, and Maintenance (ITM) of Fire Protection Systems/ASSE15000 (UA 7050) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will identify and study the codes for inspection and testing of water-based fire protection systems in accordance with the National Fire Protection Association (NFPA 25). Students will review the process and documentation, as well as perform hands-on testing, including the maintenance required to restore the system to normal operation. In addition, students will have the opportunity to take the American Society of Safety Engineers (ASSE) 15000 Water-Based Fire Protection certification exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 186 Water Quality Fire Protection (UA 7051) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review fire protection water quality policies required by the Center for Medicare and Medicaid Services to minimize the development of legionella bacteria and other diseases in water systems. Students will create and demonstrate methods to survey/map, monitor, assess risk and remediate health hazards in building water systems, including documentation by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 188 Standard and ASHRAE 12 Guideline. In addition, students will review and take the American Society of Safety Engineers (ASSE) 12063 certification exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 187 Revit for Fire Protection III (UA 7027) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will use HydraCAD software to estimate building projects and will use Building Information Modeling (BIM) to virtually install a fire protection system in a medical facility. This real-world simulation project allows students to experience the challenges and level of detail required to design fire protection systems with an aim to prepare them for advancement as a foreman, superintendent, project manager or detailer. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6



**UAT 188 Modernizing Delivery of Course Curriculum (UA 1007) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will create a syllabus and lesson plan using current online or electronic resources available to enhance curriculum delivery. Topics include an overview of lesson plan development, use of Blackboard learning management system (LMS), navigation of online resources and digital deployment. Students will integrate these resources in the curriculum to be used at the United Association (UA) Instructor Training Program. Upon completion of the course, students will demonstrate delivering a new lesson plan for evaluation. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; UAT 211, UAT 212, UAT 213 and UAT 214, minimum grade "C"; UAT 214 may enroll concurrently

**UAT 190 Water Quality Mechanical (UA 6080) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review pipefitting and mechanical systems water quality requirements as mandated by Centers for Medicare and Medicaid Services to reduce the risk of legionella bacteria and other diseases. Students will create and demonstrate methods to survey/map, monitor, assess risk and remediate health hazards in building water systems. Students will use documentation by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 188 Standard and ASHRAE 12 Guideline. In addition, students will review and take the American Society of Safety Engineers (ASSE) 12062 certification exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 191 Advanced PowerPoint for Instructors (UA 3103) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will expand their PowerPoint software skills by utilizing current and advanced PowerPoint applications. Students will create and present a slide show using charts and tables in a PowerPoint presentation. PowerPoint topics, such as customizing themes using slide masters, collaborating with others online, creating instructional games with PowerPoint, as well as connecting to online class presentations will be covered. Students will use various resources, including a textbook, articles and documentation from reliable online resources. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 192 DfMA and Modular Construction (UA 3110) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will explore Design for Manufacture and Assembly (DfMA) workflows and methods as they apply to mechanical and plumbing piping installations. Current modular and automated assembly techniques and new piping technologies will be reviewed. Automation software, modular piping assemblies and automated tools will be utilized and demonstrated using the United Association (UA) Fabrication Freight Container trainers. DfMA integration with virtual design and construction workflows with the use of industry-standard software tools will be demonstrated. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 193 Robotic Total Station (RTS) Layout Basics (UA 3045) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn the basics of Robotic Total Station (RTS) systems as they apply to Trimble®, Leica®, and Topcon® manufacturers. Topics include basic setup, layout, and quality control. Additional topics include verifying surveyed control points and establishing building control points to other levels of the structure. Hands-on applications using current software and equipment will be emphasized as students load model files as well as points files into the Total Station Tablets for each manufacturer. This is a required course towards UA RTS Certification. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 194 Advanced Technologies for Training Centers (UA 3115) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify advanced cyber security technologies to protect the local Training Center's Information Technology (IT) infrastructure. Topics include the types of cyber security, equipment and technology infrastructure as well as industry-related technology adoption. Students will also discuss budgeting strategies for various technologies and identify best practices when implementing cyber security policies. Students will create and present a comprehensive plan on the implementation of one of the technologies at their training center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 199 Operation of Destructive Cutting and Strap Bending Equipment for UA Weld Test (UA 8042) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will perform the safe handling and operation of weld test equipment as verified by a United Association Authorized Testing Representative (ATR) Certified Weld Inspectors (CWI). Students will review weld testing procedures according to the American Society of Mechanical Engineers (ASME) code requirements for bend and destructive cutting tests of equipment at the regional Authorized Testing Facility. In addition, students will demonstrate testing and bending methods on abrasive cutters and wrap around benders. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 200 Emerging Welding Technologies (UA 8017) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, the students will explore the advancements in the ever-changing and expanding welding industry. Students will be introduced to how the integration of emerging welding processes such as gas metal arc welding (GMAW), waveform control, friction stir, keyhole TIG (K-TIG), and electron beam welding (EBW), will influence the next generation of welding equipment. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 201 Advanced Instructor Training I (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: UAT 151

**UAT 202 Advanced Instructor Training II (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: UAT 151

**UAT 203 Advanced Instructor Training III (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: UAT 151

**UAT 204 Advanced Instructor Training IV (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: UAT 151

**UAT 205 Advanced Instructor Training V (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course is designed for graduates of the 5-year UA instructor training program. Trade teachers will expand their skills and knowledge in teaching techniques and methodologies, as well as technological concepts. The student will select one 45 hour module or two 22 1/2 hour modules from unit one or unit two. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: UAT 151

**UAT 206 Commercial Refrigeration and Supermarket Applications (UA 6002) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine emerging technologies in the commercial and industrial refrigeration fields. Students will study system components and operations of building automation systems for supermarket applications, as well as secondary fluid systems, compound/cascade refrigeration, and natural refrigerants. There will be hands-on demonstrations for students to identify installation and operation of these components and systems. The title of this course was previously Improvement of Technical and Professional Relationship Skills for Supermarket Applications (UA 6002). Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 208 Introduction to Oil-Less Magnetic Bearing Centrifugal Compressors (UA 6015) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to magnetic bearing technology for Heating, Ventilation, Air Conditioning (HVAC) compressors. Topics include compressor history and theory, manufacturer-specific component operation and testing procedures. Students will also learn about monitoring software, from installation and communication to testing and troubleshooting issues. In addition, students will gain hands-on experience working with Danfoss Turbocor, Johnson Controls and Trane magnetic bearing compressors and equipment. Instructional materials will be provided for student use at their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 209 Methods in Teaching Backflow Prevention Certification (UA 4006) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course prepares students to establish teaching certification classes for backflow testing at their local Training Center in accordance with the American Society of Safety Engineers (ASSE) Series 5000 Professional Qualification Standard. Students will identify the code requirements along with practical set-up and use of a wet lab to train individuals on backflow testing procedures. In a hands-on lab, students will test and troubleshoot various sizes and types of backflows using certified equipment. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 210 Public Speaking (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course is designed to help students acquire essential speaking and listening skills for the classroom. In-class exercises focus on the delivery of lecture material and conducting demonstrations. Students polish organization and delivery skills, as well as gain a heightened awareness of the relationship between a speaker and an audience. Students are encouraged to bring materials from classes they are currently teaching as reference for class exercises. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 211 Planning, Teaching and Assessing Effective Lessons - Beginning (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This is an introductory course for students to become familiar with skills needed to effectively teach adult learners, as well as accommodate and identify different learning skills and levels. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 212 Planning, Teaching and Assessing Effective Lessons - Intermediate (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this intermediate course, students continue to develop skills to effectively teach adult learners. Students create lesson plans for various student learning styles and develop key instructional strategies such as requiring group work and incorporating visuals. In addition, they write clear and measurable objectives and design ways to assess them. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 213 Planning, Teaching and Assessing Effective Lessons - Advanced (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop teaching skills by designing courses and using interactive teaching techniques. Students will review strategies for working with various learning skill levels, including ideas and procedures for working one-on-one with students. Classroom questioning strategies and discussions will also be explored. The title of this course was previously Planning and Presenting Lessons. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 214 Developing and Presenting Effective Lesson Plans (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will organize and plan a course by developing a situational analysis as well as identifying course outcomes and objectives. Students will also create an assessment plan and schedule while designing rubrics and a course syllabus. Students will then use an eight-step problem-solving model to develop action plans for their own teaching programs. Students will present a short teaching demonstration of a lesson plan and learned material. The title of this course was previously Techniques in Classroom Interaction. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 215 Problem Solving in Trade Teaching (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course covers methods of teaching problem resolution and innovation implementation in the local UA school. Topics include analyzing and solving teaching problems, recognizing student learning disabilities, evaluating student performance and implementing innovative solutions in the local school. Students should come prepared to share innovative ideas from their local school. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 216 Innovative Welding Techniques (UA 8006) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods of teaching the advanced skills of Shielded Metal Arc Welding (SMAW) and Gas Tungsten Arc Welding (GTAW) at their local Training Center. Students will study welding processes and demonstrate various welding techniques, material selection, equipment selection, and current technology to provide proper weld preparation to improve their pipe welding skills. In addition, students will locate and navigate online resources and information to customize course material for their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 217 Welding Phase Array (UA 8036) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the principles and process of Phase Array Ultrasonic Testing (PAUT). Students will analyze test results using the Phase Array computer display information to determine and assist in the detection of the location, size and characterization of weld defects. In addition, the course will address the key steps to passing the PAUT weld inspections. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 218 AWS-CWI Recertification (UA 8039) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the American Welding Society-Certified Weld Inspector (AWS-CWI) re-certification qualification process. Students will review the AWS-QC1 (Quality Control) documents and standards. An emphasis will be placed on the duties and responsibilities involved in maintaining credentials. Students will also be introduced to other types of AWS re-certifications available while becoming familiar with the documentation necessary. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 220 Pipe Trades Applied Mathematics (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods and techniques for teaching pipe trades math for apprentices and journey workers at their local Training Centers. Students will be introduced to various teaching styles, testing and exams, as well as developing math curriculum using an online learning management system (LMS) such as Blackboard™. An emphasis will be placed on algebra and trigonometry related to the pipe trade using U.S. Standard and Metric measurements, calculated by hand, and calculated using a trade-specific calculator or application. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 222 Basic Computer for the Trade Teacher (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the basics of computers by producing professional looking documents using a personal computer. Students will also create spreadsheets to help prepare budgets and manage numerical information. In addition, students will be provided an overview of hardware and software, creating course handouts, spreadsheets and presentations using Word, Excel and PowerPoint. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 224 OSHA 500: Trainer Course in Occupational Safety and Health Standards for Construction (UA 2151) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will develop methods of teaching the Occupational Safety and Health Administration (OSHA) 10-hour and the OSHA 30-hour construction safety and health outreach programs at their local Training Center. Students will focus on adult learning principles and hands-on training techniques to identify, define, and explain construction industry hazards and acceptable corrective measures according to 29 CFR 1926 OSHA Construction Standards. Successful completion of the course will earn designation as an OSHA Authorized Construction Trainer. The title of this course was previously OSHA for the Construction Industry. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 225 Plumbing Fixtures (UA 4003) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will recognize the design and function of plumbing fixtures used in the industry, including institutional fixtures, fixture controls, appliances, and accessories. Students will review the proper piping and prefabrication needed for correct installation practices and manufacturers' recommendations. The fixtures and practices will be discussed from their earliest uses to the latest innovations using PowerPoint® presentations, videos, and classroom discussion. The title of this course was previously Plumbing Fixtures. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 226 PowerPoint for Instructors (UA 3004) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods of using Microsoft PowerPoint to create and deliver class presentations and course-related material for instruction at local Training Centers. Students will review basic tasks in PowerPoint including adding text, fonts, colors and graphics, as well as advanced topics, such as adding tables, charts, hyperlinks and animations. In addition, students will customize slide shows using drawing tools for class presentations. The title of this course was previously PowerPoint for Instructors. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; UAT 222

**UAT 228 Online Teaching Techniques Using Blackboard (UA 3002) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will continue to explore the use of the Blackboard Learning Management System (LMS) to design courses that can be taught online as well as in a classroom environment for instruction at local Training Centers. Students will discuss and demonstrate how to set up forums, chat rooms, online testing, assignments, gradebooks and external links. In addition, students will identify methods of converting traditional class materials into an online format. The title of this course was previously Online Teaching Techniques. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 230 3D Computer-Aided Drafting (CAD) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students learn methods of teaching 3D Computer-Aided Drafting (CAD). Topics to be covered include the 3D CAD environment; creation of 3D piping, 3D pipefittings and other complex solids; creating surfaces; editing solids; and utilizing AutoCAD and Quickpen Pipe Designer 3D software. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 231 UA Green Awareness Certification (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will receive instruction in "Green" awareness that emphasizes concepts and principles related to the specification, purchase and application of energy-efficient products. Upon successful completion of this course and a certification exam, students will receive a certification that attests to their knowledge of the emerging trends, terminologies, systems and products that are considered green. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 232 Drainage Systems (UA 4002) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will study the installation and maintenance of drainage systems used by pipe trades journey workers. Students will study the science behind the different types of drainage systems, venting, piping materials, and their joining methods. In addition, students will analyze public and private sewage disposal systems, as well as alternative water source drainage systems. The title of this course was previously Drainage. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 236 Coyne First Aid for the Trades (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this train-the-trainer course, student instructors will be certified to teach and to conduct the Coyne basic life support/first aid training program. The Coyne's program is accepted by OSHA. Topics to be covered include: providing basic life support for adults, infants and children; performing first aid for musculoskeletal injuries and burns; using the automated external defibrillator; and administering proper care in diabetic emergencies, seizures and near drowning. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 238 Methods of Teaching Downhill Welding (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods of teaching the techniques for downhill welding that can be used at local Training Centers. Students will review procedures in joint preparation, coupon alignment, and welding of large diameter pipe in both classroom and lab environments, according to the United Association Shielded Metal Arc Weld (UA-1 SMAW) Weld Certification requirements. They will also discuss best methods of student demonstrations for classroom instruction. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 239 AWS-CWI Certified Welding Inspector (UA 8001) (4 Credits)**

45 lecture, 15 lab, 4 total contact hours

In this course, students prepare to take the American Welding Society's Certified Welding Inspectors certification exam. Students will review relevant guidelines, policies, and procedures to identify the requirements of a welding inspector, interpret code standards, and demonstrate evaluations of weldments for acceptable standards. Upon completion of the course, students will have the opportunity to take the AWS-CWI Exam. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 240 Basic Electricity (UA 2006) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop teaching methods for safely working with electricity on job sites. Students will study electrical theory and safety, along with hands-on demonstrations and activities. Ground fault circuits (GFCI), circuit breakers, fuses and circuit capacities will be discussed along with the proper use of electrical testing equipment, including multi-meters for measuring electrical circuits. Students will navigate UA resources for use in a customized Blackboard course. The title of this course was previously Applied Electrical Fundamentals. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 241 Methods in Teaching Water Supply Systems (UA 4001) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods of teaching for potable hot water and water supply systems that can be used at their local Training Centers. Students will study water supply from a historical perspective, including sources, treatment, and distribution, as well as identify terms and materials used in installation. In addition, students will identify current advancements in technology and water conservation. Students will also demonstrate the use of applicable online resources to create instructional activities, including enhancing course material. The title of this course was previously Advanced Water Supply. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 243 Operation of the Green Trailer (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn how to present classes covering the basics of Sustainable (Green) Technology as it applies to the mechanical and plumbing systems installed and serviced by UA members. Students will learn best practices for teaching with the Hampden Green Training equipment on the UA Green Training Trailer. Trailer and equipment safety, proper trailer setup, operation of the onboard generator, rear projection system, fuel, electrical and water hookup will be covered. Some of the training demonstrators onboard the trailer are: fuel cell trainer, wind power generation, green plumbing system trainer, solar heating system, solar photovoltaic system, geothermal system trainer and a high efficiency gas furnace. UA Green Training Trailer event scheduling and transportation policies will be covered. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 243C UA Pipe Trades Trailer Operations (UA 2011) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students learn how to request, set up, operate, and tear down the United Association (UA) Training Trailers (trade-specific). Students will discuss the administrative requirements, policies, procedures, and costs involved with utilizing UA trailers at their local Training Center. In addition, students will safely demonstrate set-up, operation and tear-down of a trailer in a hands-on environment. Successful completion of this course will earn a UA qualification card. The title of this course was previously UA Pipe Trades Trailer Operations. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 244 Fundamentals of Variable Frequency Drives (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the theory and operation of variable frequency drive (VFD) motors and controllers that can be used for instruction at local Training Centers. Students will review installation and troubleshooting, including complete factory startup on various manufacturers' equipment through classroom and hands-on lab activities. Students will also navigate online UA resources in order to develop their own VFD class at their local Training Center. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 246 Concepts of Controlled Bolting (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn to teach concepts of achieving integrity in a bolted joint, the theory of how a bolted connection works dynamically as a piece of equipment, the calculations required to tighten a flange to maximize joint life and integrity and the practical means to achieve preload including the use of hydraulic torque wrenches and hydraulic bolt tensioners. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 247 Piping Codes for Industrial Work (UA 8004) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify piping codes and the properties of metals. Topics will include the history of codes, piping metallurgy, material selection, installation, and welding requirements. They will also review procedures for testing, inspection and stamping, in accordance with the American Society for Mechanical Engineers (ASME) B31.1 code. In addition, students will demonstrate the fundamentals and standards for materials, design of expansion loops, cold springing, and quality control through classroom and hands-on applications. The title of this course was previously ASME B31.1 Code. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 248 General Valve Repair (UA 5006) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to methods for teaching the general valve repair course for the 3-year valve re-certification for apprentices and journey workers at their local Training Center. This course will focus on the standards of the United Association (UA) Quality Valve Repair Manual, as well as the equipment and tools required to teach the course. In addition, students will study the requirements for proctoring the online and practical hands-on Electric Power Research Institute (EPRI) test. The title of this course was previously Valves. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 249 ARC Welding Practical Fundamentals and Theory (UA 8002) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify and review arc welding techniques and practical applications used to develop a welder training program. Students will incorporate online learning resources and visual training aids for classroom and hands-on demonstrations. They will identify welding theory, available equipment, electrode AWS (American Welding Society) classifications, process definitions and selection. The title of this course was previously Methods in Teaching Arc Welding. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 250 Advanced Plan Reading (UA 2095) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop problem-solving skills related to construction documentation for coordinating piping systems. Students will interpret and analyze construction drawings and piping system plans to identify differences in specifications, plan submittals and associated construction drawings. Utilizing current technologies, techniques and digital tools, students will demonstrate the construction process for a piping system. The title of this course was previously Advanced Plan Reading UA 2005. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 251 Related Science (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about methods of teaching about the principles of science for plumbing and pipe fitting tradespeople. Following a review, students will discuss and develop skills to instruct on topics such as properties and characteristics of water and steam, hydraulics and pneumatics, mechanics, metals, alloys, synthetics and corrosion. Students will generate ideas for their own classrooms to teach the science related to both the plumbing and pipe fitting trades. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 252 Introduction to Computer-Aided Drafting (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

This course is designed as an introduction to computer-aided drafting (CAD) and the CAD environment. Emphasis is placed upon the fundamentals of CAD software and the creation of two-dimensional CAD piping drawings. AutoCAD drafting software and Windows 2000 or Windows XP operating systems are utilized. It is suggested that each student bring a USB thumb drive to use with this course. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 253 Installation, Design, and Operation of Copper Piping Systems (UA 4005) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review the proper methods of various copper joining techniques used in the pipe trades. Hands-on demonstration of various copper pipe joining methods including soldering and brazing as well as current mechanical techniques will be practiced. In addition, students will review installation-related field failure, troubleshooting, and prevention. Students taking this course will be able to implement these techniques at their local Training Center. The title of this course was previously Copper Piping Systems. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 255 Fundamentals of Rigging (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about methods of teaching the basic fundamentals of rigging. Topics to be covered include: rigging safety in basic knots and their uses, wire ropes, web slings, load calculations and their applications in the trades. Also, signaling methods and practical, safe uses in every day installations in the piping industry will be discussed. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 257 Hydronic Heating and Cooling (UA 6006) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the principles of hydronics heating and cooling. Topics include time and control theory, equipment and controlling components, design, installation methods and operation. Students will demonstrate maintenance and troubleshooting techniques with hands-on activities. In addition, students will locate and navigate instructional resources, methods and materials for teaching an effective hydronics course at their local Training Center. The title of this course was previously Hydronic Heating and Cooling. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 259 Backflow Repair and Maintenance (UA 4007) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the need for and safety of backflow devices as well as demonstrate the repairing, trouble-shooting, and testing of backflow systems. Students will be provided with extensive hands-on practical experience dealing with repair and maintenance of large diameter assemblies from various manufacturers. In addition, students are required to test and document the various types of backflow devices currently used in the field. Online resources relating to backflow repair and maintenance will also be discussed and utilized. The title of this course was previously Backflow Repair and Maintenance. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 260A Methods in Teaching Steam Systems (UA 6081) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify methods of teaching the principles of steam generation and distribution in the heating and power industries. Students will be provided with theoretical and practical techniques as well as instructional resources to explain installation, operation, and maintenance of steam systems. Discussions include safety controls, operating components and piping to promote further understanding of steam distribution. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 261 Heat Fusion Joining of Polyethylene Pipe (UA 5017) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this hands-on course, students will study the theory, chemistry, applications, and procedures involved in heat fusion and electrofusion of polyethylene pipe (PE) used in the pipefitting industry. Students will join various size PE pipes in butt fusion, socket fusion, and saddle type joints using each method with emphasis on proper fusion procedures and manufacturers' recommendations. In addition, students will discuss specific courses that can be implemented at their local Training Center. The title of this course was previously Thermoplastic Fusion. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 262 Methods of Teaching Drawing Interpretation and Plan Reading (UA 2004) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will use the Drawing Interpretation and Plan Reading set to develop methods to teach drafting, drawing interpretation, and plan reading at local Training Centers. Students will be shown how to teach orthographic and isometric drawings, followed by a hands-on drafting lab where they will interpret and create their own drawings and plans. In addition, students will review various types of drawings, specifications, and submittals used to install piping systems. The title of this course was previously Pipe Trades Advanced Drawing. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 265 HVACR Apprenticeship Practicum (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about and develop methods of teaching the different sub-topics related to the Five-Year Heating, Ventilating, Air Conditioning and Refrigeration apprentice training program. The use of pressure-enthalpy diagrams as a teaching aid will be stressed. The HVAC Training Manual and associated Student Study Guide/Lab Manual, Instructor's Guide and DVD Series will be used as teaching tools. The ExamView test development program, its applications and how to teach with these tools will be demonstrated. This course, which also focuses on developing classroom presentation skills, will prepare students to teach an introductory HVACR familiarization course to people who have limited HVACR experience. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 266 Methods in Teaching Start, Test, & Balance (UA 6009) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop classroom and hands-on methods to create a mechanical equipment Start, Test, and Balance course at their local Training Centers. Students will navigate instructional resources including textbooks, online resources and demonstrations, as well as study the testing equipment and processes needed to document and evaluate the results of a pump performance verification and fluid flow measurements. The title of this course was previously Air and Water Balance. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 267 Advanced HVAC & R Troubleshooting (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will study basic electricity as it applies to Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) systems. Students will review electrical theory, including voltage, amperage, resistance, and wiring schematics, with an emphasis on safely troubleshooting HVACR and plumbing control systems. In addition, students will demonstrate these techniques with online resources as well as trainers in a hands-on lab environment. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 268 Technical Classes for Sprinkler Fitters (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course students will be introduced to the most current technologies utilized in the fire protection industry. Students will discuss and demonstrate the latest technology and concepts applied to the design, engineering, installation and servicing of various types of fire protection systems. Other topics covered in this course include system testing, inspections and alarm systems. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 269 Medical Gas Instructor (UA 4011) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will complete the required training to review, study, and take the National Inspecting Testing and Certification (NITC) ASSE 6050 Medical Gas Instructor certification exam. They will also develop instructional activities that can be used at their local Training Centers. Topics include the National Fire Protection Association (NFPA) 2018 codes and American Society of Safety Engineers (ASSE) Series 6000 standards that govern medical gas and medical/surgical vacuum piping systems. Students will identify installation and testing procedures as well as the qualification requirements of the installer and the brazer in accordance with the American Society of Mechanical Engineers (ASME) Section IX. Qualifying students will prepare to take the NITC ASSE 6050 certification exam at the end of the course. The title of this course was previously Medical Gas. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 270 Applied Metallurgy (UA 8003) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn methods of teaching the properties and characteristics of metals commonly used in the pipe trades. Emphasis will be given to explaining the nature of ferrous and non-ferrous metals in both their raw and manufactured form, the physical and mechanical properties of common metals and the processes used to create desired changes. The title of this course was previously Properties of Metals. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 272 Wire Feed Orbital Welding (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will learn methods of teaching wire feed orbital welding. Topics include teaching wire feed orbital equipment capacity/capabilities and their accessories; installation and set-up of equipment; machine and weld head calibration; weld joint design; tack-up; weld preparation; and welding parameters. Students taking this class should already be well versed in orbital tube welding. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 274 Oxy-Fuel Cutting and Welding (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about methods of teaching oxy-fuel safety, welding, layout and cutting procedures. Students will demonstrate proper techniques and procedures employed in successfully teaching this subject. Each student will have the opportunity to try the methods being discussed. The technical aspects of teaching as well as the practice of cutting and welding pipe with oxy-fuel will also be covered. Students selecting this course should come to class in safe working clothes. The title of this course was previously Oxy-Acetylene Cutting and Welding. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 275 Trade Related Trigonometry (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about methods of teaching the principles of trade-related trigonometry. Following a review, students will discuss and develop skills to instruct on topics such as trigonometry, application of a right triangle, Pythagorean theorem, rolling offsets (including cut-downs/degree of roll), equal spread offsets and miter joints. Teaching techniques will be addressed and problematic areas will be discussed to provide student instructors with ideas for their own classrooms teaching. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 276 Orbital Tube Welding (UA 8007) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will acquire the skills to teach their membership the purpose, concept, and intricate procedures of orbital welding using various power supplies. Students will explain the purpose and concept, create and input weld programs, set up and calibrate equipment, prepare weld tubing, as well as purge and weld coupons for inspection. This is accomplished in both the classroom and a hands on Orbital weld lab. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 278 GTAW Wire Feed Welding (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will learn methods of teaching the Gold Trac GTAW wire feed machine pipe welding process at the local level. This course introduces the operation, technology, comparison of analog and microprocessor-controlled systems, hot wire welding and equipment set-up and safety issues. Additionally, the course covers process variables, system programmer control functions, weld parameter selection and development and Dimetrics power supplies such as GT2. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 278B Teaching Wire Feed Welding (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course focuses on training the trainer and will provide the student with an understanding of how to teach the orbital wire feed welding process at the local level. Topics cover the operation, technology, equipment set-up and safety issues associated with these types of advanced welding systems. Additionally, the course includes process variables, system programmer control functions, weld parameter selection and gives the theoretical basis for weld program development. The course is structured to provide students a hands-on training approach using the AMI 227 and Liburdi Gold Track orbital wire feed welding systems. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 283 Art of Tube Bending (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will demonstrate both the simple and Set Back, Advance and Gain (SAG) measurement method of tube bending. Students will identify the bender procedure while using trigonometry as it relates to degree bends and layout. Discussions, explanations and hands-on demonstrations will allow students to layout multiple parallel offsets, along with lineup/leveling of tubing in the bending process. An emphasis will be placed on the reading of isometric drawings, wire templates, and numbering of the bending order. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 284 Gas Metal Arc Welding (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about methods of teaching the techniques of gas metal arc welding (GMAW). Safety, set-up and minor maintenance and repair of GMAW equipment, selection of project consumables, selection of the proper gases and troubleshooting techniques will be emphasized. Hands-on welding instruction demonstrations will be given on plate and pipe in all positions. Specialized applications of flux core, metal core, aluminum and pulse MIG will also be presented. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 286 Industrial Refrigeration Trainer (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn methods of teaching basic commercial refrigeration concepts using the Hampden Industrial Refrigeration Trainer (IRT). Topics include operating and servicing large industrial systems requiring water-cooled condensers; electric and hot gas defrost systems; cooling towers; hot bypass capacity control systems; crankcase pressure regulators; crankcase heaters; and pressure pumps. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 288 Shielded Metal Arc Welding (UA 8012) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop the skills and techniques used for Shielded Metal Arc Welding (SMAW) of alloy and heavy wall piping materials. Students will recognize the current methods and advanced techniques to the SMAW process for variable thicknesses of pipe. Students will demonstrate these techniques in a hands-on lab application. The title of this course was previously Shielded Metal Arc Welding. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 290 Gas Tungsten Arc Welding (8014) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods for teaching advanced techniques of Gas Tungsten Arc Welding (GTAW) that can be used at their local Training Center. Students will identify procedures and techniques utilized in welding corrosion-resistant alloys and a variety of materials. In addition, students will prepare and present a course activity using resources available through the UA Online Learning Resources (UAOLR). The title of this course was previously Gas Tungsten Arc Welding. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 292 Pipefitting Layout (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the 57 ¼" method for pipefitting layout. Students will demonstrate layouts of simple, rolling, and mitered fittings along with odd angle fittings and laterals, all without using math. Students will also be able to lay out precise pipe angles of nozzles/o-lets on tanks and vessels as well as utilize the Pipe Trades Pro Calculator in pipefitting layout. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 294 Plumbing Service I (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn about methods of teaching plumbing service. Topics include the operational, installation, and safety aspects including troubleshooting and repair of fixtures, flush valves, sewer systems, faucets, appliances, and electronics in the plumbing industry. Aspects of customer relations and marketing will be reviewed. This course will address the employer, employee relationships, and standard company policies of the plumbing industry. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 294A Methods in Teaching Plumbing Service, Maintenance and Repair (UA 4009) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will develop methods for presenting plumbing service, maintenance and repair curriculum at their local Training Center. Topics will include the operation, installation, repair, and safety aspects of fixtures, flush valves, sewer systems, faucets, appliances, and electronics in the plumbing industry. Students will utilize classroom and hands-on training, such as training modules, tools, the UA Online Learning Resources (UAOLR) and the Plumbing Service, Maintenance and Repair manual. This course contains material previously taught in UAT 294. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 294B Plumbing Customer Service for the UA Craftsman (UA 4010) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will examine methods for development and delivery of their local UA Plumbing Service Customer Care curriculum. Through discussion, lecture, videos and role-playing activities, students will identify internal and external customer care techniques focusing on communication. Students will utilize Mechanical Service Contractors of America (MSCA) customer service resources along with the techniques acquired in this course to increase the effectiveness of the curriculum at the local Training Center. The title of this course was previously Plumbing Service II. Limited to United Association program participants. Level I Prerequisite: Academic Reading and Writing Levels of 6; UAT 294A minimum grade "B"



**UAT 300 Using Blackboard in UA Apprenticeships - Advanced (UA 3003) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to advanced methods and strategies for constructing and teaching Blackboard Learning Management System (LMS) courses at local Training Centers. Students will create, develop, edit and manage a Blackboard course site using advanced Blackboard tools, online resources and current system updates. In addition, students will identify and demonstrate calendar tools for announcements, scheduling and monitoring student progress. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 301 Data Harvesting (UA 6066) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be introduced to the advantages of data harvesting through Direct Digital Control (DDC). Specific attention will be given to how to recognize controls, set up cloud-based controls and data setpoints, as well as how to upgrade these controls to align with current software. Students will engage in hands-on learning by collecting, evaluating, and interpreting DDC data. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 302 Process Management for UA Technicians (UA 6003) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop curriculum for their local training programs to prepare new apprentices for work in the service industry. Participants will focus on identifying safety concerns relevant to service work, such as arc flash and radio frequency exposures. This course will also present new technology including the use of mobile devices and related software. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 303 Safe Handling of Mildly Flammable Refrigerants (UA 6059) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the safe handling guidelines of mildly flammable (A2L) refrigerants upon system installation or servicing of refrigeration and air conditioning systems. Students will be introduced to the functions, precautions and differences between to mildly flammable (A2L) and non-flammable (A1) refrigerants. In addition, students will recognize and demonstrate procedures for leak checking, evacuation and recharging A2L refrigeration systems. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 309 Combustion Analysis (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This sustainable energy course is designed to educate UA instructors on the essential information required to train apprentices and journeymen on achieving higher fuel efficiencies, better system performance and reduced greenhouse gas emissions by performing and understanding combustion analysis. It is necessary to perform a combustion analysis on all combustion systems to ensure safe operation at peak efficiency. Upon successful completion and assessment, participants will receive a certification that attests to their knowledge of combustion analysis and carbon monoxide safety. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 311 Confined Space (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will receive a five-day training that is a combination of OSHA's (#2260) 3-day classroom-based confined space course on OSHA's General Industry Standard with CPWR's 2-day hands-on simulated entry training. Topics include legal issues, permit programs, ventilation and rescue as well as workshops on confined space hazards and classification of spaces. CPWR's Hands-on training includes air monitoring, ventilation, supplied-air respirator (SARs), self-contained breathing apparatus (SCBAs), entry procedures, retrieval and other aspects of permit-required confined space entry. Participants who complete the course will receive an OSHA 2260 Certificate, a CPWR 16-hr Confined Space Certificate and a CPWR Train the Trainer Certificate. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 312 Energy Auditing and Retrofit (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course will cover how the sustainable energy movement is using the energy retrofit process to meet the goal of making buildings efficient. All steps in the energy retrofit process will be covered with emphasis on the audit and Energy Conservation Measures (ECM) portion of the process. Also, the instruments used in the audit process as well as the engineering concepts of developing ECM will be covered. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 313 Creating Future Leaders (UA 2104) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop leadership skills through professional development and committee involvement. Best practices related to increasing motivation and improving accountability will be explored using role-play techniques. Additionally, students will engage in organizing and hosting committees using online platforms. Resources for creating and updating organizational bylaws and charters as well as the procedures for establishing a not-for-profit organization will also be discussed. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 314 Infection Control and Risk Assessment (UA 2157) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify procedures for Infection Control Risk Assessment (ICRA) to perform construction and renovation tasks in healthcare or other occupied facilities. Topics will include practical uses of ICRA tools including containment, negative air flow, high-efficiency particulate air (HEPA) filtration and safe work practice techniques. Students will also review and take the ASSE ICRA Certification Exam as well as develop instructional activities that can be used for training at local Training Centers. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 315 Estimating for Mechanical Projects (UA 2017) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop skills to transition from a construction field supervisor to an office estimator. Utilizing field experience and current technology, students will identify and recognize take-off skills, labor assignments and strategies for the bidding process. In addition, students will review pre-bid assessment skills, turn over responsibility and the soft skills needed for the office environment. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 316 Administration of a United Association Weld Test Facility (UA 8000) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the rules and responsibilities of the United Association Welder Certification Program (WCP) to become an Authorized Training Representative (ATR). These duties include administration and documentation functions, as well as determining the acceptability of weld test assemblies. Students will develop a course plan for instruction at their local Training Center. The title of this course was previously Administration of a United Association Weld Test (UA 8000). Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 317 Opioids and the Workplace: Prevention & Response (UA 2170) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will explore worker awareness training programs in order to identify workplace risk factors and solutions for opioid use, misuse and addiction. Students will study opioid crisis topics such as its history, workplace implications and interventions, as well as policy reforms for both employers and employees. Upon successful completion of the course, students will receive an OSHA opioid awareness certificate and be able to deliver the course at their local Training Center. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 318 OSHA 502 Update for Construction Industry Outreach Trainers (UA 2152) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will identify the updates of Occupational Safety and Health Administration (OSHA) 500 standards, policies, and regulations. Students will apply adult learning principles and interactive training techniques to clearly identify, define, and explain construction industry hazards and acceptable corrective measures. These teaching techniques will enhance the 10- and 30-hour Construction Outreach training program courses. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 319 Recruitment Resources and Strategies (UA 2103) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the many recruitment tools and marketing opportunities available to Training Coordinators for promoting eligible apprentices. Students will locate, create, and order UA Education and Training Department printed brochures, push cards, and videos designed to explain the benefits of joining a United Association apprenticeship. Students will also discuss online tools to attract applicants, including social media and advertising. The title of this course was previously Utilizing Resources to Expand Recruitment Efforts. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 320 Labor History and the UA Part I: 1600's - 1920's (UA 2008) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students explore the development of the trade union movement in North America from the 1600s to the 1920s. Students will review the early obstacles and challenges of organized labor as well as identify the leaders and events that helped shape the movement. Topics will include the history of work, technology development, trade unions, government policy and globalization of labor organizations, including the United Association. The title of this course was previously History of the Labor Movement. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 321 Labor History and the UA Part II: 1930 - Present (UA 2009) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students continue to explore the history of the trade unions movement, including business-related government policy and its globalization from the 1930s to the present. Students will review the changes brought forth from the post-Great Depression era, including the emergence of modernized societies, leading to increased size and diversity of the organized labor movement. Other topics include labor union power and influence, along with the challenges met through innovative approaches to technology, training and organization. The title of this course was previously Labor History and the UA: 1920 to Present. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6; UAT 320 minimum grade "C"

**UAT 323 Financial Literacy for Apprentices (UA 2101) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course is designed to provide students with the resources necessary to develop custom financial literacy to meet apprentices' needs at their local Training Center. Students will identify local and online resources and discuss budget and financial strategies for short- and long-term financial management and education. Students will plan for apprentice and journeyman wage advancements, seasonal and economic-related income fluctuations, as well as life-changing events. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 324 Industrial Rigging Technologies (UA 5009) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course covers industrial rigging technologies including precautions required when lifting materials and equipment. Students will calculate proper/safe rigging of loads as well as identify the proper maintenance of rigging equipment including personal protective equipment (PPE). Practical application of industrial rigging and virtual crane signaling training modules will be demonstrated. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 325 Industrial Rigging (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will learn methods of teaching about industrial rigging. This course has a theoretical and a practical component covering the best rigging practices, calculating centers of gravity, sling stress, crane set up, and the use of tuggers, jacks, and rollers. There will be a written exam along with the performance exam, which upon passing the student will receive a UA/EPRI certification for industrial rigging as well as a rigging course CD and example workbook. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 326 Grooving Fundamentals and Installation (UA 2180) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the proper fundamentals of pipe grooving and installation. Topics include the anatomy of a groove, tool setup procedures, product line, safety testing, and proper installation of grooved piping systems. Students will also be introduced to Revit software and will design a grooved piping spool project. Students will be involved in hands-on training including designing, fabricating, and pressure testing a grooved piping spool project. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 330 Labor History and the UA (UA 2010) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will explore the history of the trade union movement, including business-related government policy and its globalization from the 1600s to the present. Students will review the early obstacles and challenges of organized labor and identify the leaders who helped shape the labor movement. Students will discuss the changes brought forth from the post-Great Depression era, including the emergence of modernized societies, leading to increased size and diversity of the organized labor movement. Topics will include the history of work, technology, skilled trades unions and government policies in relation to the growth of labor organizations. Students will also recognize the power and influence of labor unions, along with innovative approaches to technology for training and organizing skilled trades union members. This course was previously UAT 322. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 345 Cross Connection Control (UA 4008) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the hazards associated with cross-connection control of water systems. Topics include cross-connection terminology, fluid dynamics, and the proper use of backflow prevention methods, devices and assemblies. Students will conduct a hands-on site survey to identify and document the risks and hazards of cross-connections, as well as recommend the proper methods, devices, or assemblies to bring the site to compliance with approved standards. This course contains material previously taught in UAT 358. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 350 Semiconductor Orbital Tube Welding (UA 8047) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the theoretical and practical skills needed for semiconductor orbital tube welding. Students will compare and contrast orbital welding done using various power supplies and demonstrate proper weld specifications, equipment setup, and calibration of the prep tubing. Proper purging, welding coupons, and other procedures will also be addressed. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 351 Plumbing Codes (UA 4004) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop methods of teaching plumbing codes, including requirements, technical comparison, interpretation and practical applications, which can be taught at the student's local Training Center. Students will review the history and development of plumbing codes and research local jurisdictional requirements to prepare course delivery for journeyman exams. In addition, students will demonstrate virtual tools and instructional techniques for course instruction. The title of this course was previously Plumbing Codes. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 353 ASME Section IX Welding Code (UA 8015) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify welding procedures, specifications, and welder qualifications in accordance with American Society of Mechanical Engineers (ASME) for Boiler and Pressure Vessel Code: Section IX. Students will evaluate the basic metallurgy and welding processes as well as identify welder qualifications and documentation that are compliant with Section IX. In addition, students will demonstrate these procedures in both classroom and lab environments. The title of this course was previously ASME Section IX Welding Code. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 354 Quality Control Management (UA 8040) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify the quality control requirements of the American Society of Mechanical Engineers (ASME), the National Board of Boiler and Pressure Vessel Inspectors (NBBI), and the American Welding Society (AWS) as they apply to boiler piping systems and equipment. Students will recognize boiler and pressure vessel codes, along with the required piping standards for quality assurance of the pressure integrity of piping systems. In addition, students will identify and demonstrate the proper documentation of quality control programs and verification of code compliance in the inspection process. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 357 TIP TIG Wire Feed Welding Process (UA 8016) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will recognize the process of using TIP TIG (Tungsten Inert Gas) welding and its relationship to the Gas Tungsten Arc Welding (GTAW) and Hot Wire Feed welding. Students will identify and demonstrate TIP TIG welding procedures and how the filler metal deposit maintains GTAW quality. In addition, students will study the safety, operation, technology, and equipment set up associated with advanced TIP TIG welding systems. The title of this course was previously TIP TIG Wire Feed Welding. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 358 Cross Connection Control (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will learn about surveys and inspections of cross connection control to become ASSE Surveyor Certified and instruct apprentices at their local union. Topics include: identifying cross-connections; understanding how backflows occur; methods used to control backflows; recommended applications for each type of backflow assembly; interpreting plumbing codes and local ordinances; and inspecting a facility for cross-connections. Exercises include reviewing plans and going to an actual site to do a survey inspection for cross-connection control in addition to developing strategies for teaching these topics. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 359 Medical Gas Refresher (UA 4012) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn current codes and standards associated with medical gas and vacuum systems as per certified instructor requirements. Students will review the National Fire Protection Association (NFPA) 99 Health Facilities Code, the American Society of Safety Engineers (ASSE) 6000 Standard, American Society of Mechanical Engineers (ASME) Section IX, ASTM B819, and ASME 16.22, while identifying current code changes. In addition, students will study and take the National Inspection Testing and Certification (NITC) recertification exam. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 360 Water Quality Plumbing (UA 4050) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review domestic plumbing water quality requirements as mandated by Centers for Medicare and Medicaid Services to reduce the risk of legionella bacteria and other diseases. Students will create and demonstrate methods to survey/map, monitor, assess risk and remediate health hazards in building water systems including completing documentation by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 188 Standard and ASHRAE 12 Guideline. In addition, students will review and take the American Society of Safety Engineers (ASSE) 12061 certification exam. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 362 Advance Valve Repair Instructor (UA 5007) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify maintenance procedures and hydraulic torquing for pneumatic control valves and pressure seal valves. Students will disassemble, inspect, and reassemble valves according to procedures in a hands-on environment. In addition, students will navigate other resources such as 3-D imagery DVDs and the online Quality Systems Manual website to identify documentation and certification resources for use at their local Training Centers. The title of this course was previously Valve Repair Recertification. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 363 Medical Gas Inspector (UA 4013) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will identify the requirements for installer qualification of medical gas and medical/surgical vacuum piping system installation and testing, in accordance with the National Fire Protection Association (NFPA) 2021 codes and American Society of Sanitary Engineers (ASSE) Series 6000 standards. Students will also recognize requirements for brazer qualification for medical gas equipment in accordance with ASME Section IX. Using United Association (UA) instructional resources, students will present a lesson plan for medical gas training for use at their local Training Centers. In addition, students will be given the opportunity to complete the National Inspection Testing and Certification Corporation (NITC) ASSE 6020 certification exam for inspector certification. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 364 Safe Handling and Installation of Fuel Gas Systems (UA 4016) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review the installation and procedures involved in the safe handling of Polyethylene (PE.) pipe used for underground gas service piping. Students will review codes that include safety precautions, depth, markings, risers, and meter settings for piping systems. System pressure tests will be demonstrated, including using the Kuhlman pressure test gauge. Students will also be review ditch safety and repairing existing PE. plastic gas lines and returning them to service. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 365 Viega Train the Trainer (UA 4017) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will review Viega press connection piping systems including Copper Tube Size (CTS) metallic press systems for liquid and gas, Iron Pipe Size (IPS) metallic press systems for liquid and gas, and cross-linked polyethylene (PEX) press and crimp systems for plumbing and mechanical applications. Technical aspects, typical applications, installation best-practices, tooling, and pressure testing of these systems will be reviewed and demonstrated. Students will also review other topics that include approvals, codes, and standards governing these systems along with contrasting press technology to traditional methods of pipe joining. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 368 One Day Retro Fit (UA 6035) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will explore the process for one-day retro fit of both furnaces and packaged rooftop units (RTU). Students will identify and demonstrate the proper use of sheet metal tools to measure, fabricate and install transitions to existing furnace ductwork and the removal and replacement of old RTU with new curb adaptor and new RTU. Students will also demonstrate hands-on troubleshooting techniques for both furnace and RTU to identify and address potential unit problems at startup. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 370 Heat Fusion Joining of Thermoplastic Pipe (UA 5018) (3 Credits)**

45 lecture, 3 lab, 3 total contact hours

In this course, students will explore the theory, applications, and procedures for heat fusion for joining polypropylene pipe (PP) using Aquatherm piping. Classroom and hands-on activities include joining pipes with an emphasis on fusion setup procedures, operation, and equipment. Upon successful completion of this course, students will be certified by McElroy and Aquatherm as trainers in the processes demonstrated through their established guidelines. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 371 Crane Signalperson Training and Certification (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

This course uses the OSHA Signalperson Training Program, which is a state of the art interactive signalperson training aid. The course covers all pertinent requirements of the current OSHA 1926.550, ASME B30.5, B30.23, and even the proposed OSHA Cranes and Derrick Standard 1926.1400. The course covers theoretical and practical components of signaling and crane characteristics and limitations. This course uses instructor materials which include practice scenarios so that signaling becomes second nature to students. Certification and Examiner (proctor) credentials are awarded upon successful completion of the course. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 372 UA/IBEW Instrumentation Calibration Certification Level II (UA 5021) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will explore the process of instrument calibration and prepare to implement an instrument calibration program at their local Training Center. Students will demonstrate calibration and documentation of various devices in a classroom and lab environment. In addition, students will prepare to take the UA/International Brotherhood of Electrical Workers (IBEW) Electrical Power Research Institute (EPRI) Level II Administrator Certification for proctoring of exams at their Training Center. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 373 Petrochemical Facility Awareness (UA 5028) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will learn the history of oil and identify its global impact in the petrochemical industry and the refineries that produce it. Students will study the fundamentals of refinery units and their operations, refinery culture, permit requirements, and emergency action plan awareness. Students will also discuss the hazards of each unit and review pipefitting skills which include fabrication, pressure testing, safe bolting practices and rigging fundamentals. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 380 Managing Financial Operations of a Training Program (UA 9004) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will be given a comprehensive overview of financial responsibilities associated with the operations of a Joint Apprenticeship Training Committee (JATC) training program. Students will discuss financial and legal topics including investments, accounting principles and financial reporting as well as fraud prevention and Department of Labor (DOL) audits. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 381 Internal and External Communication for Training Directors (UA 9009) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will identify and focus on the day-to-day communication challenges that training directors/coordinators face with the many stakeholders involved in the training program. Through focused discussion and application of communication strategies, students will develop awareness of the challenges and tactics that improve communication and productivity. Strategies related to creating language for operative messaging will be presented. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6

**UAT 382 Apprentice Selection Procedures and Interview Process (UA 9010) (1.5 Credits)**

22.5 lecture, 1.5 lab, 1.5 total contact hours

In this course, students will develop an understanding of the how to conduct efficient, fair, non-biased and accurate structured interviews for the apprenticeship selection process. Discussion topics will include creating a positive experience for apprenticeship candidates, avoiding legal challenges in the interview process, and training others to conduct appropriate apprenticeship interviews. Students will participate in mock interviews as both an interviewer and an apprentice. Group feedback will be an essential component of this training. Limited to United Association Instructor Training program graduates. Level I Prerequisite: Academic Reading and Writing Levels of 6